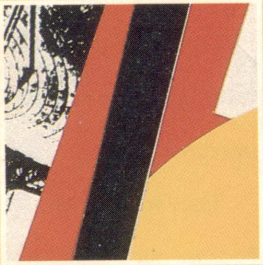


# HP Professional

AN INDEPENDENT PUBLICATION FOR USERS OF HP COMPUTERS ■ VOL. 3 ■ NO. 4 ■ \$4.00

APRIL 1989

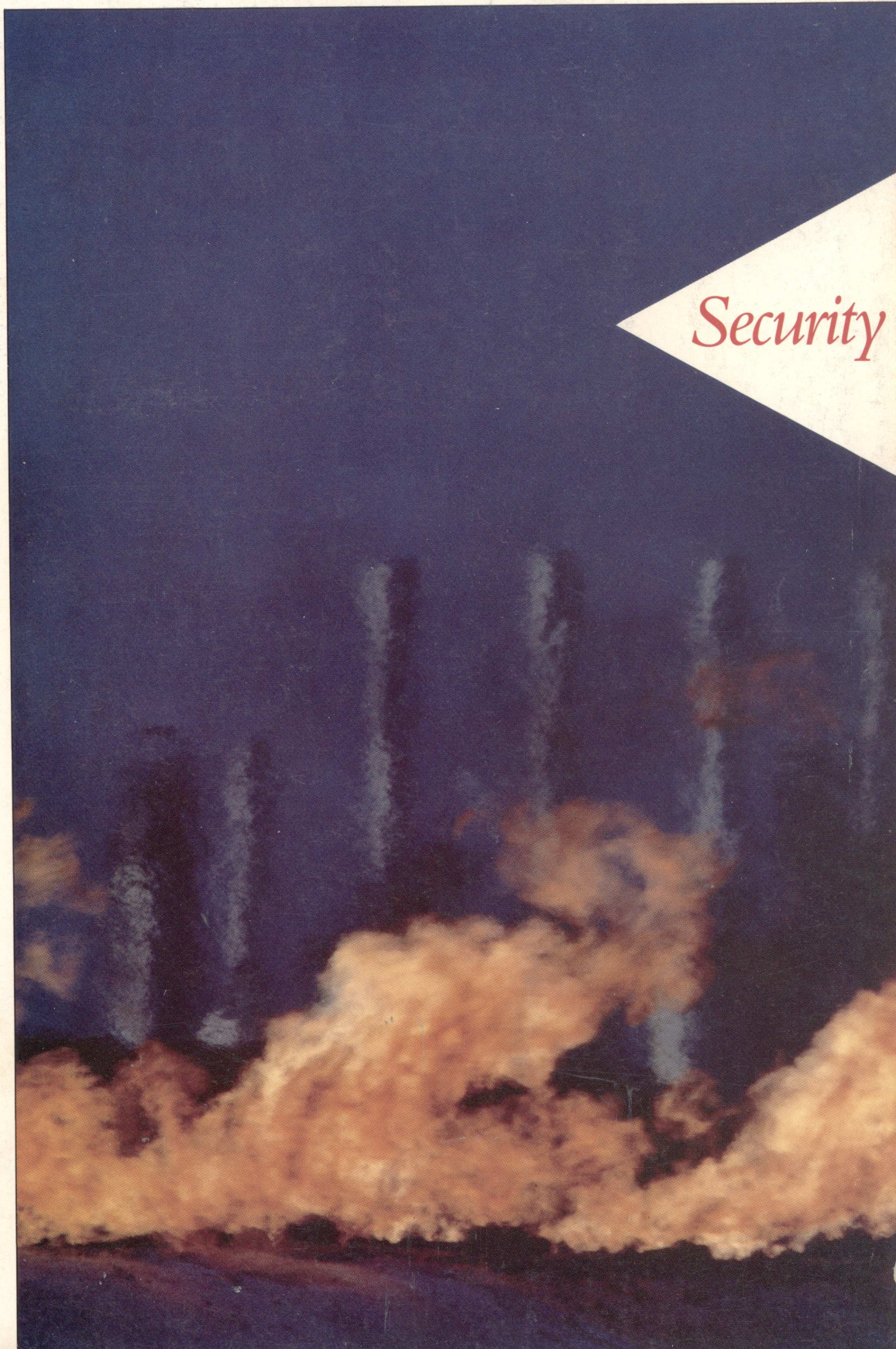
- MPE Security—  
Is It Adequate?
- Salvaging Erased  
HP Files
- Lab Review:  
Printer Gems



## FIELD SERVICE

*Maintaining 100  
Percent Uptime*

*Security*





# We're #1

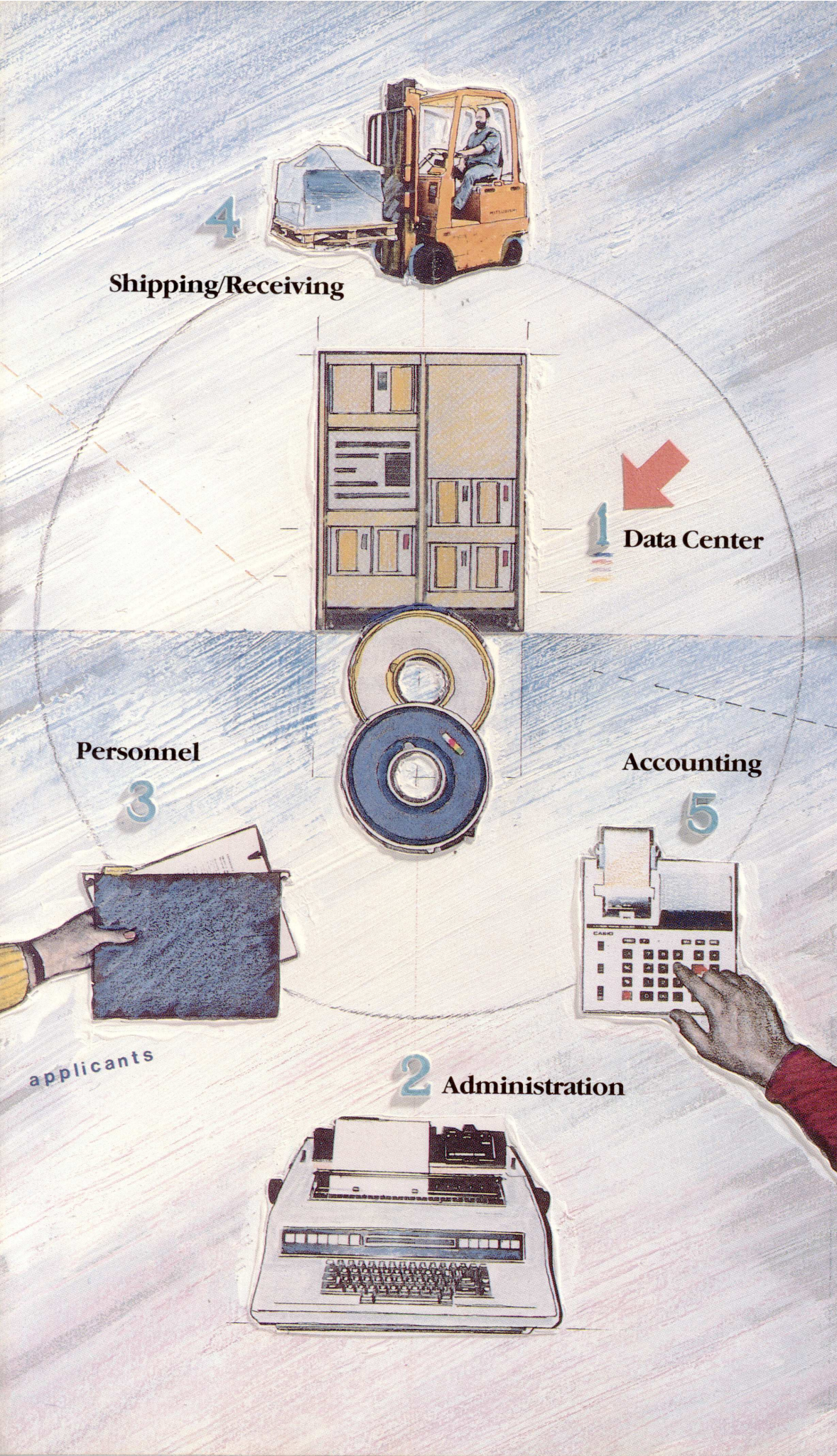
At Unison, the focus—the only focus—is on providing innovative software solutions for automating data center management. This single-minded commitment has helped make us the market leader.

Today, our customer base includes many of the world's largest and most successful corporations. Companies such as Kodak, DuPont, Northern Telecom, Monsanto, Compaq, Rockwell, and Hewlett-Packard have incorporated Unison's software into their data center operations.

They've selected Unison because our products are as reliable and easy to use as they are powerful.

Only one company provides such high-level HP data center software and support: "For a permanent solution, it's Unison." 415 Clyde Ave., Mountain View CA 94043, 415-968-7511

CIRCLE 141 ON READER CARD



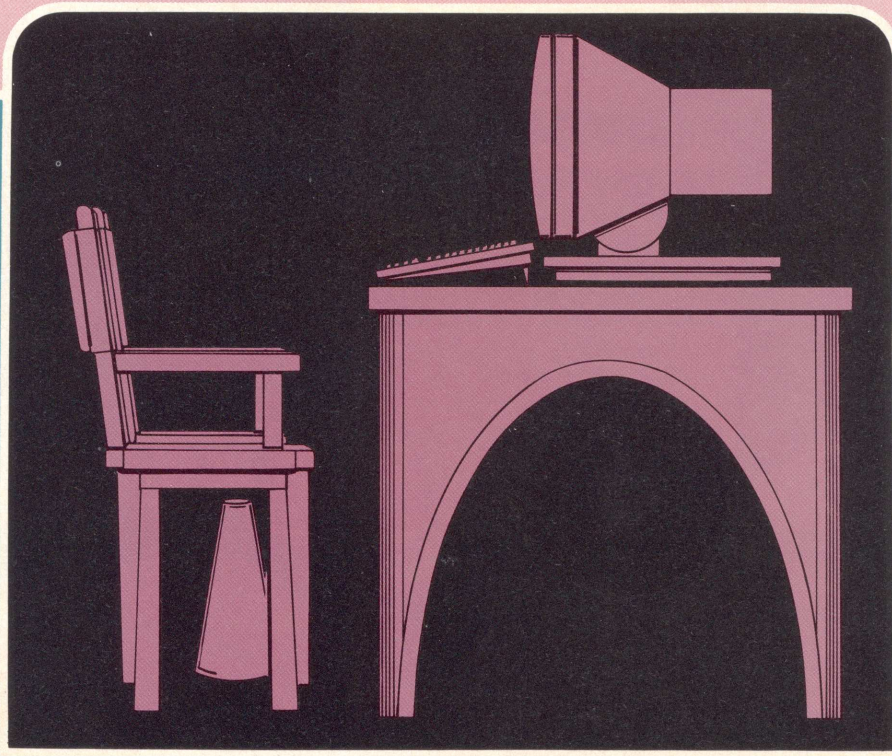
**Unison**  
The  
data center  
management  
company  
**SOFTWARE**



# SCREEN TEST THE HCT TODAY

Ever since its introduction, critics have raved about the performance of the Cumulus HCT. But naturally, we encourage you to screen test it for yourself, side by side with a comparable HP terminal. Because when you do, we know the choice will be obvious.

For your own private HCT screening, contact Cumulus today. Call our toll-free hotline: 1-800-648-6004; in California, 415-960-1200; in Canada, 1-800-648-4454. Or write: Cumulus Technology Corp., 1007 Elwell Court, Palo Alto, CA 94303.



## SCREEN CREDITS

**Compatibility** 700/92 ♦ 700/94 ♦ 2392 ♦ 2394  
VT-52 ♦ VT-100 ♦ ANSI X3.64

**Physical** Tilt/Swivel base ♦ 2392 keyboard layout

**Display** CRT: 15-in. flat profile ♦ 91 sq. in. of viewable display area ♦ P167 page white, standard ♦ Non-glare surface ♦ Dynamic focus for edge-to-edge readability ♦ Screen format: 80 or 132 columns ♦ 13 x 16 character cell (80-column mode) ♦ 75 Hz refresh rate ♦ 47.66 MHz horizontal pixel rate ♦ Proprietary SLEEP mode

**Communications** Main port: RS232/C or RS422 asynchronous ♦ Auxiliary port: RS232/C asynchronous

**Memory** 8 pages of display memory ♦ 16K of non-volatile memory ♦ 2394/A-compatible forms cache

VT-52 and VT-100 are registered trademarks of Digital Equipment Corporation. Cumulus and HCT are trademarks of Cumulus Technology Corporation.

CIRCLE 198 ON READER CARD

  
*a much better way*



# One Source, Many Solutions

HP computer users have come to rely on IEM to provide innovative, affordable hardware solutions of exceptional quality. From memory boards and interface cards, to the latest in optical disk technology, IEM offers an extensive selection of products designed with the needs of the end user in mind.

- Memory Boards
- Interface Cards
- Buffer/Interface Converter
- I/O Expander

- Optical Disk Drives and Jukeboxes
- Winchesters and Flexible Drives
- Removable Winchesters
- Intelligent Tape Backup
- And More!



*Expand Your Horizons*



IEM, Inc. P.O. Box 8915  
Fort Collins, CO 80525  
(303) 223-6071 • (800) 321-4671  
TWX 910-930-9445 • FAX (303) 223-4246

CIRCLE 117 ON READER CARD



# C CONTENTS

APRIL 1989

VOL. 3, NO. 4

---

## 32 **FOCUS: Protecting Your Data**

by David L. Stanton

Is MPE Security Adequate?

---

## 36 **FOCUS: Disaster Recovery Options**

by Peggy King

Examining Emergency Procedures Can Increase Productivity In Everyday Operations.

---

## 42 **FOCUS: Hot Site Services**

by Peggy King

Six Companies That Can Bail You Out When Disaster Strikes.

---

## 48 **FOCUS: Disaster Recovery**

by Don Person

Resurrecting Erased HP Files.

---

## 52 **The Benefits Of ADA**

by Richard Riehle

It's Reliable, Modifiable, Understandable And Portable.

---

### COLUMNS

---

#### FROM THE LAB:

##### **Bradford's Text Editor**

by Del Lukens .....62

##### **Printer Gems**

by David B. Miller.....64

#### **HP-UX: The Bourne Shell**

by Andy Feibus

Creating Shell Programs

For Repetitious Work .....68

#### **SECURITY: Does Your Security System Measure Up?**

by Jeffrey Caldwell

Steps You Can Take To Improve Security...70

#### **PC TIPS: Writing Text On The HP Vectra Display**

by Miles B. Kehoe

Speed Effects Performance .....72

#### **FIELD SERVICE: Testing The Network**

by Ron Levine

Maintaining 100 Percent Uptime

Is Mandatory For Many Users.....78

### DEPARTMENTS

---

**Editorial** ..... 8

**Letters** ..... 10

**Industry Watch** ..... 12

**News & Trends** ..... 16

**New Products**..... 26

**Product Showcase**..... 92

**Consultants Directory**..... 92

**Advertisers Index**..... 96

**Calendar**..... 96

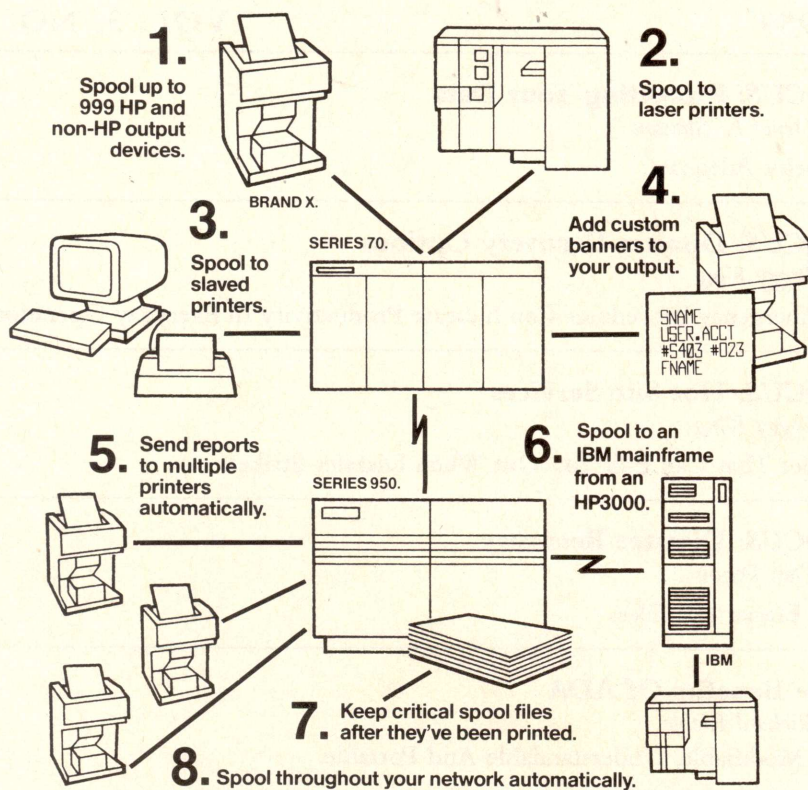


**INDUSTRY WATCH:**  
DEC And HP  
Court Each Others  
Customers (p.12).

**On The Cover:**  
Photo by Four By Five/  
William Strode



# Eight good reasons that make Omnispooler & Infonet your number one choice for spooling.



You've got a lot invested in your hardware, and it's only natural that you want to use it to its fullest. So, when you told us that you needed a sophisticated spooler that would let you send print files to any printer anywhere in your company, we listened, and developed OMNISPOOLER & INFONET.

Whether you run a single HP3000 shop or a multi-machine network, OMNISPOOLER & INFONET give you unprecedented control over all aspects of your printing operations. No matter how many systems or printers you currently have or are planning to add to your network, OMNISPOOLER &

INFONET have the flexibility to handle your requirements. Carolian even has a module that allows you to automatically send reports from the HP3000 to your IBM. OMNISPOOLER & INFONET also give you the option to centralize or distribute control of printing so that you can organize your entire data center for the highest level of efficiency.

With OMNISPOOLER & INFONET you can be sure that you're making the best use of ALL your hardware and your staff now and in the future.

## At Carolian we listen to you. 1-800-263-8787

### CAROLIAN

CANADA — Carolian Systems International Inc. (416) 673-0400. Telefax (416) 673-7030. SINGAPORE — Singapore Computer Systems Pte. 775 2477. MEXICO — Nunez, Santa Cruz Y Asociados, S.A. 545 31 07.

ENGLAND — Nike Computers Limited. (0902) 851381. SWEDEN — Datalaget I Vaxjo AB. 470 810 50. THE NETHERLANDS — Quant Systems. 02503-40334. ISRAEL — Softkol. 3 413762. ITALY — Sele Sistemi S.p.A. (02) 8527. FRANCE — Sages SA. 1.47.37.55.55. BELGIUM — Sages Benelux. 56.41.83.99.

CIRCLE 110 ON READER CARD

# HP Professional

Publisher: Carl B. Marbach

Editorial Director: R.D. Mallery

Editorial

MANAGING EDITOR Thomas M. Halligan

COPY EDITOR Andrea J. Zavod

WEST COAST EDITOR Peggy King

FIELD SERVICE EDITOR Ron Levine

CONTRIBUTORS Jeffrey Caldwell, Andy Feibus, Miles B. Kehoe, Don Person, Richard Riehle, David L. Stanton

DP Laboratory and Testing Center

DIRECTOR R.D. Mallery

SENIOR TECHNICAL EDITOR David B. Miller

TECHNICAL EDITOR Sheldon Green

TECHNICAL EDITOR Del Lukens

MIS SOFTWARE MANAGER Bonnie Auclair

MIS SYSTEMS MANAGER Kevin J. Kennelly

Design & Production

DESIGN/PRODUCTION MANAGER Ruth Ann Leiby

DESIGN/PRODUCTION ASST. Pat Messina

ADVERTISING BOOKING COORD. Lori Goodson

ADVERTISING PROD. COORD. Suzanne Garr

TRAFFIC/PRODUCTION ASST. Kim Macheski

PROMOTIONS MANAGER Tim Kraft

GRAPHIC DESIGNERS Richard Kortz,

Thomas Owen, Sue Ann Rainey

PRODUCTION ARTISTS Patricia P. Kraeckel,

Kristy Yates

TYPESETTER MaryEllen Coccimiglio

Circulation

CIRCULATION DIRECTOR Carrie Eisenhandler

CIRCULATION MANAGER Betsy Ellis

FULFILLMENT MANAGER Margie Pitrone

CIRCULATION DBA Rebecca Schaeffer

PROFESSIONAL PRESS, INC.

PRESIDENT Carl B. Marbach

VICE PRESIDENT R. D. Mallery

VICE PRESIDENT Peg Leiby

VICE PRESIDENT Helen B. Marbach

EXECUTIVE EDITOR Linda DiBiasio

EXECUTIVE DESIGN DIRECTOR

Leslie A. Caruso

DIRECTOR OF MARKETING Mary Wardlaw

CONTROLLER Andrea Beneke

ASSISTANT TO THE PUBLISHER

Jan Krusen

For information on how to contact your sales representative, see page 96. Editorial, advertising sales and executive offices at 921 Bethlehem Pike, Spring House, PA 19477 ■ (215) 542-7008 TWX 910 333 9522 ■ Easylink 62805174 FAX (215) 628-2845

HP PROFESSIONAL ISSN 0986145X is published monthly by Professional Press, Inc., 921 Bethlehem Pike, Spring House PA 19477. Subscriptions are complimentary for qualified U.S. and Canadian sites. Single copy price, including postage, \$4. One year subscription rate \$30 U.S. and Canada; \$60 foreign. All orders must be prepaid. Second Class postage paid at North Wales, PA, and additional mailing offices. POSTMASTER: Send all correspondence and address changes to HP PROFESSIONAL, P.O. Box 445, Spring House, PA 19477. COPYRIGHT © 1989 by Professional Press, Inc. All rights reserved. No part of this publication may be reproduced in any form without written permission from the publisher. All submitted manuscripts, photographs and/or art work are sent to Professional Press, Inc. at the sole risk of the sender. Neither Professional Press, Inc. nor HP PROFESSIONAL magazine are responsible for any loss or damage. HP PROFESSIONAL is an independent journal not affiliated with Hewlett-Packard Company. HP and Hewlett-Packard are registered trademarks and HP PROFESSIONAL is a trademark of Hewlett-Packard Company.

BPA

ABP



New version 6.0



# DB GENERAL

## ★ *Automatic capacity management*

DBGGENERAL monitors and changes dataset capacities automatically based on your configuration. Never worry about full datasets and changing capacities again.

## ★ *Dynamic detail set reorganization*

You can now stop and restart DBGGENERAL's detail set reorganization, and it will pick up where it left off. No more need to reserve several hours of exclusive access -- instead, run it for short periods whenever time is available.

## ★ *Global expert diagnostic*

Not only is this new diagnostic much faster and easier to use than anything we've ever offered, it also gives expert recommendations for solving the problems it detects - all it needs is the database name.

## ★ *Dynamic broken chain repair*

Broken chains are repaired in place with no path rebuild or unload/reload. There is no quicker method for fixing these and other critical problems.

## ★ *Single-pass structural changes*

From minor adjustments to major redesign, DBGGENERAL offers the most flexibility in database restructuring. Queue up changes or prepare a new schema, and even apply changes to multiple bases.

## ★ *Fast compressed tape backup*

DBGGENERAL's STORBASE module can reduce backup time from 35 - 50% and tape usage by 50% over conventional methods while retaining compatibility with transaction logging recovery.

## ★ *Optimum master capacity sampler*

DBGGENERAL includes a quick, simple, shared-access method for determining the optimal capacities for the best performance of your master datasets.

## ★ *Test database generation*

Stop testing programs and training users on production databases. DBGGENERAL can create small test databases with live data while keeping all relationships intact.

**... and of course, 24-hour-a-day, 7-day-a-week technical support worldwide!**

Houston 4265 San Felipe  
Houston, TX 77027  
(713) 621-2808  
Fax (713) 621-1639  
Buffalo (716) 825-4021  
Cincinnati (513) 891-7867  
Los Angeles (213) 432-7713

Australia (02) 484.3979  
Australia (03) 874.3633  
Belgium (056) 41 83 99  
Belgium 03/237.79.06  
Canada (613) 448-2333  
Denmark (1) 822211  
France (1) 45 88 88 30

Germany 089/6088-3077  
Germany 06722/6046  
Holland (30) 52-1114  
Israel 972-3-413762  
Scandinavia 0910-364 80  
Mexico (525) 2543479  
UK (0223) 460881



**BRADMARK**

Computer Systems Inc.  
CIRCLE 180 ON READER CARD



# Compete.



Your HP 3000 system has helped you achieve success for your company. With it, you've survived in a competitive marketplace. But now you need to meet the challenges of the future. And with an upgrade to an HP 3000 Precision Architecture system you can do just that.

From aerospace to electronics, education to healthcare, Hewlett-Packard has helped many organizations build for tomorrow. Here are just two success stories.

---

*"With the new system from Hewlett-Packard, we're able to develop new products faster. And that's an important part of our marketing requirement. To come out with new products sooner than your competition gives you the leading edge."*

---

—Don Senecal, Corporate Controller, Spalding Sports Worldwide

---

Sporting goods manufacturer Spalding had been using both a Series 70 system and a Series 58 system from HP. But as the company

experienced double-digit annual growth, large-scale data processing began to take longer and longer. The result? A bottleneck that kept end-users from accessing the system.

Spalding responded by upgrading to an HP 3000 Precision Architecture system. The migration was achieved with minimal retraining and disruption. Today, monthly batch-processing time has been reduced by more than two-thirds.



# Dominate.



*"Since our HP 3000 Precision Architecture system was installed, our claims entry is at a record high, and our claims backlog is at a record low. It's a very nice position to be in."*

*—Richard Villari, Vice President, Community Blue*

Community Blue, the HMO for Blue Cross of western New York state, has enlarged its membership base dramatically since 1985. But an HP 3000 Series 950 Precision Architecture computer has helped ease its growing

pains. Community Blue has been able to consolidate all of its business on a single interactive system. With it, the needs of 150,000 current members and a projected 250,000 more can be met reliably and cost-effectively.

HP 3000 Precision Architecture systems help businesses meet critical goals better than ever. Based on Hewlett-Packard's enhanced version of RISC, they provide timely information, increase productivity, cut computing costs, and lay the

foundation for future growth.

If you want to insure your leadership position, upgrade to an HP 3000 Precision Architecture system. Call us today at **1-800-752-0900, Ext. 234D**. And we'll send you a free HP 3000 Upgrade Advantage Kit.

**There is a better way.**



**HEWLETT  
PACKARD**



# An Eye-Opener

---

Uniforum in San Francisco's Moscone Center was an eye-opener. In short, 15,000 attendees (refreshing) were treated to the spectacle of all the major computer makers locked in a bare-knuckle fist fight. They were fighting about who could field the fastest new workstation or server. The products that were introduced so exceed the performance of the traditional products from all the players that I was convinced that I had done a 'Rip Van Winkle' and had missed about 10 years of product development.

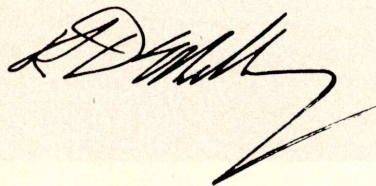
But the truth is that the RISC revolution is now over and products are on the shelf. These new machines surpass the performance of any of the traditional architectures: There is no comparison. Depending on the model, a VAX or HP-PA mip sells for between \$3,000 and \$30,000. A RISC mip in a workstation or small server now is priced between \$500 and \$850.

What's most exciting is that the field is almost wide open. Data General went from an also-ran to a major contender overnight by introducing a new line based on the Motorola 88000 series. DEC was the leader in redefining the cost of a multiuser server mip with its new DECsystem 3100 (4-64 user, 14mip, 300mb-1.5gb servers, \$20,000-\$75,000). And we only are seeing the tip of an iceberg.

Our industry is undergoing a revolution unparalleled in its history. In the space of a few months, machines with 30 times the price/performance have appeared as full-fledged products from the leading vendors, all of whom have been forced to discard their existing product lines by this amazing new architecture.

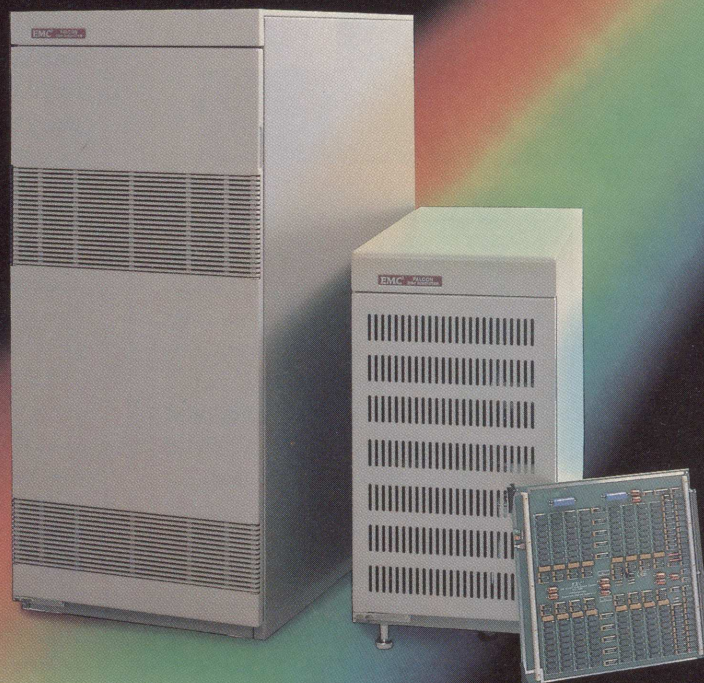
If you are wondering about the next wave of products, look at the Intel i860. This little marvel loafes along at 33 mips in its integer unit while its floating coprocessor pours out 80 megaflops . . . simultaneously. Not bad for \$750, quantity 1,000! This little gem isn't vaporware. You can buy evaluation quantities right now. The MIPS R3000 promises 25-30 mips and is shipping.

I am not sure where all of this is going to end, but the direction sure is clear.





# Across The Spectrum EMC Is Your Total Performance Solution



## With high performing HXP-95X memory & Falcon Series disk subsystems for your HPPA computer.

It takes constant innovation to be a top performer. HP's new Spectrum Series systems add a whole new dimension to HP 3000 computing by enabling faster processing than ever before seen on classic HP 3000's.

EMC has been helping you maximize the performance of your HP system for years by providing reliable, high performing memory and disk products. Our success stems from innovative engineering and manufacturing excellence backed by worldwide support. EMC gives you all this at prices up to 20% less than HP's.

Spectrum users have found that greater amounts of memory and disk storage are required to reach peak performance with HPPA than was necessary with classic HP 3000's. In response to this need, EMC has developed a full line of products for the Spectrum Series. Now you can take advantage of EMC HXP-95X memory for your HP 3000 Series 950/955 and HP 9000 Series 850/855. And you can add Falcons, the fastest disk subsystems on the market, to your HP 3000 Series 925LX/925, 935, and 950/955, all at a cost that fits your budget.

EMC's HPPA compatible memory and Falcon disk subsystems are available immediately! Join the thousands of satisfied EMC customers who have turned to EMC for the solution to their performance bottlenecks.

Contact your local EMC representative today or call toll-free:  
**1-800-222-EMC2 ext. 2213.**

**EMC<sup>2</sup>** The System  
Enhancement Company.

HP is a registered trademark of Hewlett-Packard Company, Inc. EMC and Falcon are registered trademarks of EMC Corporation.

See us at SCRUG Booth #82, 83

CIRCLE 113 ON READER CARD





## LETTERS

### ANOTHER LOOK AT HP'S FUTURE

Reading Don Person's column on the future of HP in *HP Professional's* January '89 issue has left me upset over several points. I'm afraid that HP might listen to him. I've been using HP computers and peripherals for the past 11 years to do oceanographic research, and often in some very nasty conditions for electronic equipment. HP has, and still does, build serious instrument controlling computers that you can throw in a box, ship anywhere in the world, and be able to use when you arrive.

When HP introduced the Series 200 computers, I followed, and in addition to HPL was given the choice of three additional operating systems on the same hardware: RMB, HP Pascal and UNIX. RMB offered nothing that HPL didn't provide except the headache of having to rewrite programs.

However, Pascal offered an advanced compiled modular language that kept pace with the increasingly complex analysis I was trying. Incidentally, HPL is still alive and well in the hands of Structured Software Systems.

Mr. Person's article challenges HP to offer a "new" operating system, better than MS-DOS, single tasking and "wickedly efficient for one user." Mr. Person, wake up and look at HP Pascal, well disciplined, readable Pascal, with just the critical mix of extensions to

Address letters to the editor to the *HP PROFESSIONAL* magazine, P.O. Box 445, Spring House, PA 19477-0445. Letters should include the writer's full name, address and daytime telephone number. Letters may be edited for purposes of clarity or space.

make it more powerful than C! Look at some disassembly of the compiled code to see its efficiency. Try the simple efficiency of the Pascal Editor. Look at the Pascal Procedure Library to see the efficiency of its I/O and absolute real-time control. Then consider running this on a 25 MHz, 68030-based HP 360 computer. Whether Mr. Person or the world know it or not, this operating system has existed for five years and deserves careful consideration.

Like other HP technical users, I bemoan the lack of a technical word processor or spreadsheet. HP chooses to limit itself to providing excellent, albeit expensive, hardware and operating systems. Market share dictates that third parties can make more money writing yet another spreadsheet program for MS-DOS than an original decent one for HP Pascal. In fact, VisiCalc initially was available on the 200s but died for lack of interest. This is where I see HP's ven-

ture into UNIX as positive. With UNIX there is a world of professional third-party software available — provided I can pay the fare.

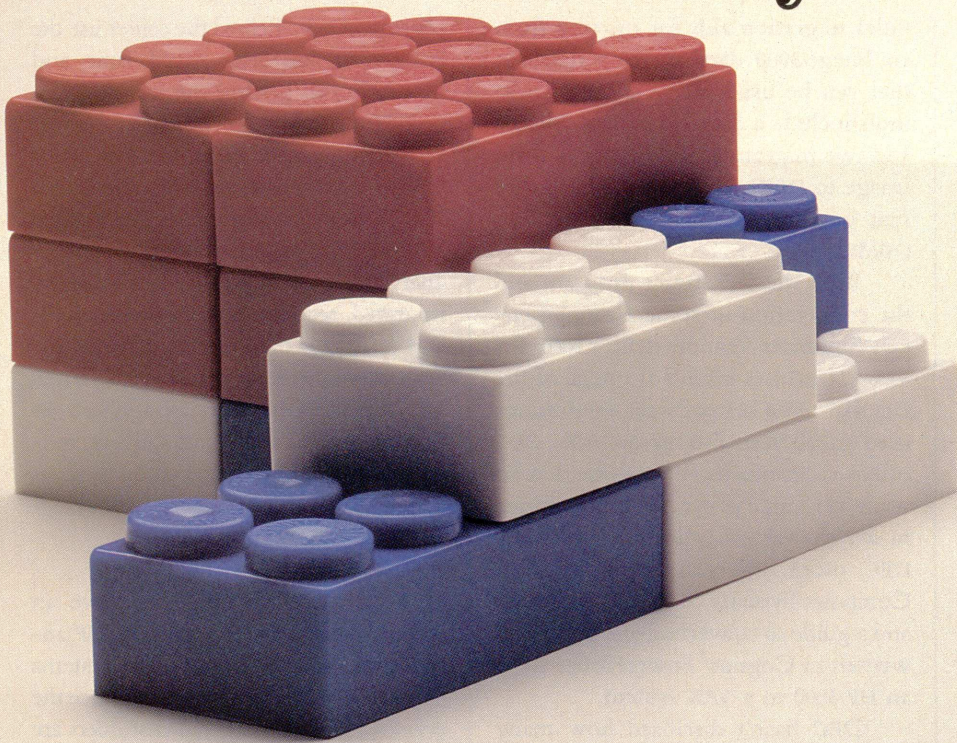
Mr. Person's maligning of UNIX notwithstanding, UNIX is a well tested, widely used, open, mainframe operating system now available to my desktop computer. The combination of faster processors and real-time interrupts eventually will solve the real-time problems. HP Pascal and RMB are both available as programming languages. I see UNIX evolving into the common hardware independent environment. Efforts by the Open Software Foundation to select a standard user interface similar to HP/Microsoft's Common X Interface or NeXT's Workspace Manager should isolate application users from the terser aspects of UNIX.

What HP chooses to do at the expensive, experimental RISC end or at the cheaper, toy MS-DOS end of its product line is for HP to decide. I can only hope that in the middle, they continue to provide serious professional workhorses. It's a fantasy for Mr. Person to think that HP can or will provide the processing power of a CRAY, the user interface of a Speak-and-Spell and the indestructibility of a 9825 all at the price of a clone.

**Jeffrey W. Noltén**  
**Programmer Analyst III**  
**University of California, San Diego**



# Customize your own information center facility . . .



## with the DataExpressSeries modular approach.

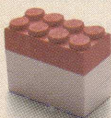


**FOUNDATION:** The core module of the DataExpressSeries links end users to their data on the HP3000. It accesses IMAGE™, KSAM, MPE and SD files to select, compute, sort, reformat and download data to PC applications.



**STRUCTURE:** The DataExpressSeries has a common menu and catalog structure. Full function key support provides even easier end user access to data. With Reflection™, downloads are automatic.

**BUILDING:** PowerHouse, Dictionary, RELATE and Omnidex Interfaces are available for enhanced access to your data. The DataCatalog option allows "views" of complex data structures to be defined for end users and security to be defined at the field value. The PrintLocal option gives end users access to their spooled output on their local printers.



In short, the DataExpressSeries is a simple, powerful information center solution to meet your needs and budget today. Since you can add options and

interfaces at any time, it provides a clear growth path to solving all your HP3000 data interchange needs in the future.

So, if you want to expand the power of your information center, call IMACS and ask how the DataExpressSeries can help you and your end users.

IMACS, helping HP3000 users since 1976.

## DATAEXPRESS SERIES™



IMACS SYSTEMS CORPORATION  
2825 Eastlake Avenue East, Suite 107  
Seattle, Washington 98102

(206) 322-7700 (800) 87-IMACS

IMX SYSTEMS CORPORATION  
London, England  
(01) 541-0242  
Telex: 51-944017

Calgary, Canada  
(403) 259-2478

IMX INTERNATIONAL  
Rotterdam, The Netherlands  
(010) 483-1126



# DEC And HP Court Each Other's Customers



## INDUSTRY WATCH

Peggy King

1986 Interex Conference in Detroit where the company rented a suite at the Pontchartrain Hotel. There, HP 3000 users heard presentations about the benefits of switching to VAX/VMS.

In the fall of 1986, many HP 3000 users had outgrown their MPE systems and were getting impatient waiting for the Precision Architecture systems. DEC sensed a market opportunity, a chance to capitalize on customers' fears about RISC-based architecture and the difficulties they'd encounter in migrating to a 32-bit machine.

DEC's VAXattract program was designed to encourage HP 3000 users to switch to VAX/VMS instead of migrating to Spectrum. MIS departments were faced with migrating applications whether or not they left HP. This made the option of switching to DEC's scalable VAX systems attractive. To sweeten the deal, DEC offered tools for migrating both commercial and technical applications from MPE to VMS.

### Migrating Tools

DEC's series of tools for migrating from MPE to VAX/VMS is called VAXattract/H3K. There are language converters for FORTRAN, COBOL and BASIC and a screen management converter and emulator for converting source files containing VPLUS/3000 screen formats. The operating system's commands converter interactively translates MPE commands to their DCL equivalents, automates the conversion of UDC files and translates MPE Job Stream files to DCL files.

The toolkit for migration also pro-

vides migration aids for moving from an Image/3000 database to a database that can be used on VAX/VMS. These tools include a data-conversion library and two migrators, one that goes from Image to DEC's Rdb/VMS and another that goes to Cincom Systems' Ultra DBMS.

With the VAXattract program and the cooperation of some Complimentary Solutions Vendors (DEC's term for VABs), DEC has taken advantage of the fact that some key software applications used on HP 3000s also run on VAXs. DEC offers assistance to HP customers who want to change platforms but continue to use the same applications software. DEC offers migration aids for ASK Computer Systems' MANMAN products and a guide to converting an application written in Cognos' PowerHouse from an HP 3000 to a VAX system.

DEC hasn't disclosed how many customers have come to them from the VAXattract program, but program manager John McDonnell provided names of customers in various industries who had migrated.

One was an aerospace research center that replaced an HP 3000 Series III with a VAX 8250. It also purchased a MicroVAX and two VAXstations and networked them.

DEC wrote the VAXattract/H3K converter for HP BASIC in response to this customer's needs to convert BASIC programs. A scientist who used the BASIC converter said that the migration process still required a great number of manual changes.

Before DEC's filter program could be used, all HP BASIC files had to be converted to ASCII for them to be comprehensible to the VAX. It also took some manual effort to rewrite the statements that the converter flagged. A DEC

consultant who helped the center use the HP BASIC converter saved time and frustration in getting the job done.

The FORTRAN conversion was more straightforward because HP's FORTRAN is written in ASCII format. In the COBOL environment, DEC offers XCOST, an AI tool that helps customers analyze which applications should be migrated, recommends migration paths and estimates the amount of work involved in migrating applications. When XCOST shows that there are applications needing major revisions, DEC recommends its CASE for Information Systems (CASE/IS).

### Fighting Back

HP launched its own offensive in response. In early January 1989, HP announced a set of programs that systems engineers had been field testing since the previous fall. The targeted customers are owners of aging standalone 11/750s and 11/780s that may have begun to require extensive maintenance and whose price/performance ratios compare very unfavorably with newer, RISC-based multiuser computers.

HP's migration program is more comprehensive than DEC's because it helps with the financial and training aspects of migration and offers software tools. The program consists of three related DEC Migration programs: the RISC Free program (VABs, especially database vendors, participate too), the VAX Buyback program and PORT/VX migration tools bundled with consulting services. In contrast with the VAXattract program, which induces customers to change from one proprietary operating system to another, the goal of the DEC Migration programs is to get customers



The leading HP terminal emulator for the Mac  
is now the only Windows-based emulator for the PC.



Session for Windows: The next generation in HP terminal emulation is here.

**F**our years ago, Tynlabs pioneered the development of Session™ for Macintosh, an HP terminal emulator for the see-and-point desktop environment. Packing a sophisticated feature set into an intuitive, enjoyable and productive user interface, our Mac products have won acclaim from users and critics alike.

Building on the foundation of Microsoft® Windows for the PC, Vectra, and compatibles, we have been able to bring the power and ingenuity of our Mac-based emulators to Windows users as well. On both Mac and PC platforms, Session makes terminal emulation a full partner with today's desktop applications. For example, you can extract data from a database on your HP host and display it on your "terminal screen" (your Session window). Using the mouse or keyboard commands, you can copy the information into your PC or Mac-based spreadsheet, perform a few calculations, then paste

the results into a memo which you send out via HPDESK. You can even run multiple concurrent sessions on the host, leaving HPDESK or a lengthy compile running in one window, while you go on to other HP-based activities in another.

If this sounds like the solution you've been waiting for, don't wait any longer. Whether your organization has PCs, Macs, or both, you can standardize on Session for all your emulation needs. And because Windows is the stepping stone to HP NewWave and OS/2 Presentation Manager, Session protects your investment in software and training as you move to these powerful new environments.

**CIRCLE 165 ON READER CARD**

Tynlabs Corporation • 811 Barton Springs Road • Austin, Texas 78704 U.S.A. • (512) 478-0611 • Telex 755820 • Fax (512) 479-0735  
HPS Software Developments Ltd. • 196a Whittington Road • London N22 4PD England • 01-881-6644 • Telex 9312130398 • Fax 01-888-4087  
Tynlabs-APPIC • 123 Rue de Petit-Vaux • 91360 Epinay sur Orge, France • (1) 64-54-87-37 • Telex 603409 • Fax (1) 69-34-03-23  
Megatec Pty., Ltd. • 2 Brunswick Road • Mitcham, Victoria 3132, Australia • (03) 874-3633 • Telex 152692 • Fax (03) 874-3633  
Infosistemas Financieros S.A. de C.V. • Bahía de Guantánamo 79 • 11300 México, D.F. • 254-3274 • Fax 254-7140  
Procesaseg S.A. • Torre La Previsora Piso 14 • Sabana Grande • Caracas, Venezuela • (582) 781-32-22 • Telex 29307 • Fax (582) 781-26-10  
Business Session is a trademark of Tynlabs Corporation. Microsoft is registered trademark of Microsoft Corp.  
Business Session for Windows was developed jointly by HPS Software Developments Ltd. and Tynlabs Corporation.



to switch from the proprietary VAX/VMS systems to any one of four HP 9000 Series 800 multiuser models that run on the standards-based HP-UX operating system.

### Trial Period

The RISC Free program gives owners of older VAXs the opportunity to test HP-PA hardware at their own sites for up to three months. If the high-end Model 850S is being considered, the trial period may be extended for an additional three months. The free trial includes use of magnetic and cartridge tape drives, disk drives, HP-IB and MUX hardware, printers, a systems console and terminals. The software includes HP-UX, Network File Services (NFS), LAN management software and ARPA services.

The list of VABs participating in RISC Free continues to grow. Prospective customers have their pick of at least a half dozen relational databases to try. Further, customers can test a sample application on more than one product during the trial period. Database vendors Oracle, Informix, Relational Technology, Progress and Unify all offer a one-month free trial of their software on the system, and HP will let the prospective customer use HP Allbase for the entire trial period.

HP has also put together an attractive financing package. Sonny Ng, sales promotional manager for the VAX Buyback program, claims that the customer's out-of-pocket expense for buying an HP system during the first year is less than the cost of maintaining an aging VAX. As part of the VAX Buyback program, HP has made arrangements with a VAX reseller so that VAX owners can receive a check for the fair market value of their existing DEC system if they wish to sell it. However, the value of the 11/7xx series has declined since DEC's recent announcement that it no longer will manufacture this series.

If the customer decides on a Series 9000 Model 800 system, HP stands ready with financing, whether the customer

ASK Computer Systems  
2440 El Camino Real W.  
Mountain View, CA 94039  
CIRCLE 280 ON READER CARD

Boston Business Computing Ltd.  
360 Merrimack St.  
Lawrence, MA 01843  
CIRCLE 279 ON READER CARD

Cincom Systems Inc.  
2300 Montana Ave.  
Cincinnati, OH 45211  
CIRCLE 278 ON READER CARD

Cognos  
2 Corporate Place, I-95  
Peabody, MA 01960  
CIRCLE 277 ON READER CARD

Digital Equipment Corp.  
146 Main St.  
Maynard, MA 01754  
CIRCLE 276 ON READER CARD

Hewlett-Packard  
3000 Hanover St.  
Palo Alto, CA 94304  
CIRCLE 275 ON READER CARD

Informix Software Inc.  
4100 Bohannon Dr.  
Menlo Park, CA 94025  
CIRCLE 274 ON READER CARD

Oracle Corp.  
20 Davis Dr.  
Belmont, CA 94002  
CIRCLE 273 ON READER CARD

Progress Software Corp.  
5 Oak Park  
Bedford, MA 01730  
CIRCLE 272 ON READER CARD

Relational Technology Inc.  
1080 Marina Village Pkwy.  
Alameda, CA 94501  
CIRCLE 271 ON READER CARD

Unify Corp.  
3870 Rosin Ct.  
Sacramento, CA 95834  
CIRCLE 270 ON READER CARD

prefers to buy, rent or lease. The Finance and Remarketing Division (FRD), the same division that refurbishes and resells used systems, handles financing. The plan with the lowest monthly payment is HP Lease With Option to Purchase (LWOP).

The third facet of the plan is designed to assist customers with porting FORTRAN applications from the VAX to a Series 800 system. The PORT/VX product consists of software tools and five days of on-site consulting services to help customers use these tools. An HP Systems Engineer (SE) works at the customer site for five days to evaluate each prospect's migration needs.

The SE moves application files from VMS to HP-UX, shows the customer how to use the FORTRAN Code Analyzer (FCA) to predict the ease or difficulty of migration, and introduces the PORT/VX tools. The PORT/VX tools include a FORTRAN Code Translator (FCT), a Data File Translator (DFT), a transport utility (Vbackup) and migration libraries to use in compatibility mode until applications can be ported to native mode.

The week of consulting also includes the migration of a selected application. The SE works with the MIS department to develop a migration plan and a performance plan to verify that the migration is complete.

Customers also can use one of HP's field-migration centers or the Technol-

ogy Access Center (Cupertino, CA) for further migration assistance. Additional consulting services are available on a time-and-materials basis.

HP's migration plan is so comprehensive that even users' concerns are considered. No one likes to change text editors or to learn a new command language. Boston Business Computing, an independent software vendor, has an editor called EDT Plus that runs on the HP 9000 Series 800 but has the look and feel of EDT, a popular VMS editor. Another product from that company is VCL, a shell over the operating system that accepts DCL commands but executes HP-UX commands. It comes with an on-line tutorial that shows DCL users the equivalent HP-UX commands. The users can pretend that nothing has changed while the MIS department tackles the migration and calls their SE back for help.

MIGRATION IS NEVER easy, but HP may have succeeded in making it inviting. Because the RISC Free program is independent of the VAX Buyback and the PORT/VX offering, I expect that many customers who want to try the HP-UX systems will be current HP 3000 owners. HP's bait to VAX owners may be as attractive to HP 3000 owners as the VAX-attract program from DEC.

Would you like to continue to see articles on this topic?  
Circle on reader card  
yes 338 no 337



To succeed today,  
you need powerful application  
development tools, and none are  
as powerful as PowerHouse.

But then, you probably  
already knew that.

The numbers speak for themselves. More than 8,000 HP installations worldwide develop the vast majority of their applications *entirely* in a PowerHouse® 4GL environment. In fact, it's fair to say that no other application development software does more to *maximize the potential of HP's platforms than PowerHouse.*

No wonder it's the leading application development environment for HP users.

**COGNOS®**



## SOTAS Incorporated Expands To SOTAS Int'l.

*Reflects Growing Overseas Business*

**S**OTAS Inc. has changed its name to SOTAS International Inc., reflecting the company's presence in the international accounting marketplace. International sales represent 35 percent of SOTAS sales. The company is represented in Canada, Europe, the Pacific Rim and Africa.

SOTAS "Accountable

Solutions" product line provides financial accounting software to users of HP 3000 and Wang VS systems. Its users have over 1,300 SOTAS applications installed worldwide.

Contact SOTAS, 192 Merrimack St., Haverhill, MA 01830; (508) 521-1300.

**Circle 379 on reader card**

## MCBA Chosen By 3M For Multisite Application

*HP 3000-Based Systems Implemented At Several Offices And Facilities*

**3**M signed an agreement with MCBA Referenced Reseller Quality Consultants Inc. to install MCBA CLASSIC Software for HP 3000 computers at various plants, sales offices and distribution facilities.

Under the agreement, 3M will use MCBA CLASSIC Accounts Payable as a draft-generated system, permitting each site to administer its "working fund account,"

generate payments and transfer financial data to the corporate mainframe.

The MCBA CLASSIC Software will be installed and modified by Quality Consultants Inc. (QCI). The system will be tested at three pilot sites initially, then installed at sites that are using HP 3000 computers.

Contact MCBA, 425 West Broadway, Glendale, CA 91204-1269; (818) 242-9600.

**Circle 373 on reader card**

## Computer Graphics Vendors Join Together

*Set Performance Measurement Benchmarks*



**S**even companies have committed funds to develop software that will provide a standard method of measuring graphics performance for displays and workstations.

Companies supporting the Graphics Performance Characterization (GPC) project are Alliant, Apollo, Hewlett-Packard, IBM, Intergraph, Silicon Graphics and Tektronix.

The National Computer Graphics Association

(NCGA) is the GPC administrator that monitors project progress and provides information to the public. A beta implementation of the GPC software will be demonstrated at NCGA '89, the association's annual conference and exposition, April 17-20 in Philadelphia, PA.

Contact NCGA, 2722 Merrilee Dr., Suite 200, Fairfax, VA 22031; (703) 698-9600.

**Circle 378 on reader card**

## Hewlett-Packard Chooses Perwill's EDI/3000 Solution

*Will Provide Full EDI-GATEWAY Functionality*

**H**ewlett-Packard has chosen Perwill Inc.'s EDIFORM/3000 and EDIPARSE/3000 solutions for its corporate EDI-Gateway in Palo Alto, CA.

Perwill's EDI/3000 solution, which contains

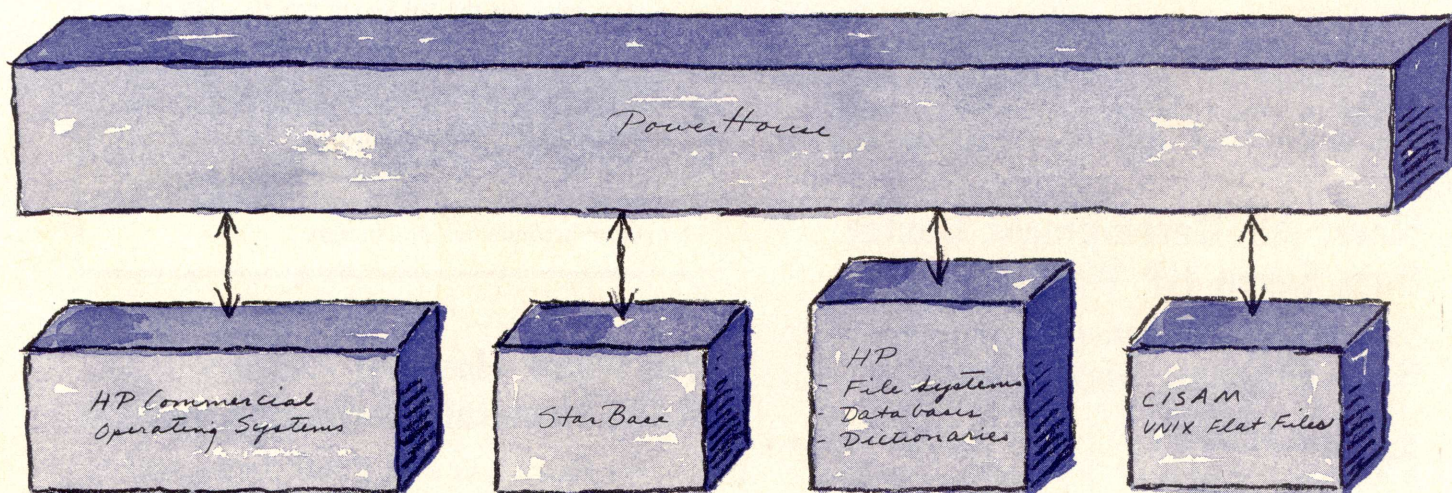
EDIFORM/3000 and also EDIPARSE/3000 presents a single set of software that facilitates trading using ANSI X12 and EDIFACT standards.

Contact Ken Waters, Perwill Inc., 5053 La Mart Dr., Suite 101, Riverside, CA 92507; (714) 683-7920.

**Circle 375 on reader card**



# What you didn't know is that only PowerHouse integrates every HP commercial operating system, including HP-UX.<sup>®</sup>



When you implement the PowerHouse solution, you integrate your HP environment.

That, in a nutshell, is the strength of the PowerHouse solution.

Unlike common database approaches, which chain you to a captive environment, the PowerHouse solution acknowledges a simple, salient *business* fact: you've spent time and money getting to where you are today. Far from expecting you to abandon your current applications, as common 3rd party databases do, our solution preserves and enhances the investment you've already made in HP hardware and software.

The PowerHouse solution also acknowledges a simple, salient *computing* fact: environments today are as likely as not to be a mixture of different hardware platforms, oper-

ating systems, databases, even data sites. The beauty of PowerHouse is that it works with and, even more importantly, *helps you integrate* the disparate elements that make up your computing world.

With the PowerHouse solution, you get powerful 4GL development tools with links to CASE products, spreadsheet programs and PC LANs.

You get flexible database options—options that bring cohesiveness and enhanced performance to the most popular HP databases and all HP dictionaries. You get full support for all of HP's commercial platforms, including MPE V<sup>®</sup>—which other, so-called "complete" solutions ignore.

Perhaps most interesting of all, PowerHouse StarBase,<sup>™</sup> our new

RDBMS, will soon support HP's Precision Architecture Systems. Creating a distributed data management environment that offers you unparalleled performance, flexibility and freedom.

No wonder PowerHouse is the 4GL HP recommends most for internal MIS use.

Now that you know all this about PowerHouse, the only thing that remains for us to tell you is the number at which we can be reached. It's 1-800-426-4667. For seminar information, 1-800-548-6750.\*

Now you're thinking strategically.

**COGNOS<sup>®</sup>**

\*In Canada, call 1-800-267-2777. In Europe, call +44 344 486668.

Cognos Corporation, 2 Corporate Place, L95, Peabody, MA 01960. Cognos Incorporated, 3755 Riverside Drive, P.O. Box 9707, Ottawa, Ont. Canada, K1G3Z4  
Cognos and PowerHouse are registered trademarks of Cognos Incorporated. PowerHouse StarBase is a trademark of Cognos Incorporated. Other trademarks are the property of the respective trademark holders.

CIRCLE 193 ON READER CARD



## Decision Data Signs \$20 Million OEM Agreement

### *Part Of HP's Peripherals OEM Program*

**H**ewlett-Packard announced a \$20 million OEM agreement under which Decision Data Inc. (DDI) will purchase newly developed HP terminals compatible with IBM System 3X and AS/400 computers.

The new terminals will be resold by Decision Data Computer Corp. a subsidiary of DDI.

The OEM terminals were developed jointly by HP and DDI and are being manufactured at HP's

automated facility in Roseville, CA.

The terminals will be used in System/3X and AS/400 business applications, such as departmental computing, data processing for small businesses, payroll and inventory control.

The contract is part of HP's recently established Peripherals OEM Program, which provides products to high-volume manufacturers of computer systems.

## Naval Air Development Center Buys Seven HP Workstations

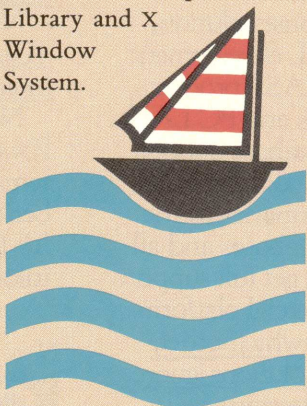
### *Selects HP 9000 Series 835 Systems For Oceanographic Mapping System*

**H**ewlett-Packard announced the receipt of a \$1 million order from the Naval Air Development Center (Warminster, PA) for seven HP 9000 Model 835 graphics workstation to be used by NADC for the ISPADS (Integrated Survey Processing and Display System) contract. The system assists in sophisticated oceanographic mapping.

The HP 9000 computers process input data and execute elaborate modeling programs for real-time display of ocean-floor bathymetry. The data input will come from a variety of sonar and navigation systems connected to the computer

via a shipboard local area network.

The HP 9000 systems on order are based on HP's RISC architecture. They include seven HP 9000 Model 835 TurboSRX computers with floating-point coprocessor, 16 MB or RAM, a six-channel multiplexer, a 16-user license, the Starbase Graphics Library and X Window System.



## Arvey Paper & Office Products Invests \$5 Million For Automation

### *Buys ADI And HP Software, Hardware*

**A**rvey Paper & Office Products, a division of International Paper, has purchased nearly \$5 million worth of American Data Industries (ADI) retail-management software and HP minicomputers and PCs to automate its superstore nationwide.

In addition, Arvey will receive more than \$1 million in customized software services and training specifically designed for the office product and printing supplies market. The software will operate on 24 HP 3000 minicomputer and 125 HP Vectra PCs.

ADI enhances the HP Vectra PCs by adding bar-code scanner, magnetic-strip readers, cash drawers and invoice printers.

The PCs will feed point-of-sale informational directly to 23 HP 3000 minicomputers located at Arvey's stores. Information for these remote systems will be exchanged with an HP 3000 Model 70 located at Arvey's corporate headquarters in Chicago.

## Five Major Hospital Centers Utilize Hospital Information Systems

### *Systems Based On HP 9000 Series 300*

**H**ewlett-Packard and Infostat Inc. (Dallas, TX) signed contracts with five major hospital centers for integrated hospital information management systems valued at approximately \$4 million.

Included is a single order from Sacred Heart Corp. (Denver, CO) for \$1.4 million.

The other orders are from the Southern Oregon Medical Center (Grants Pass, OR), Grady Memorial Hospital (Chickasha, OK), Davies County Hospital (Washington, IN) and Madera Community Hospi-

tal (Madera, CA).

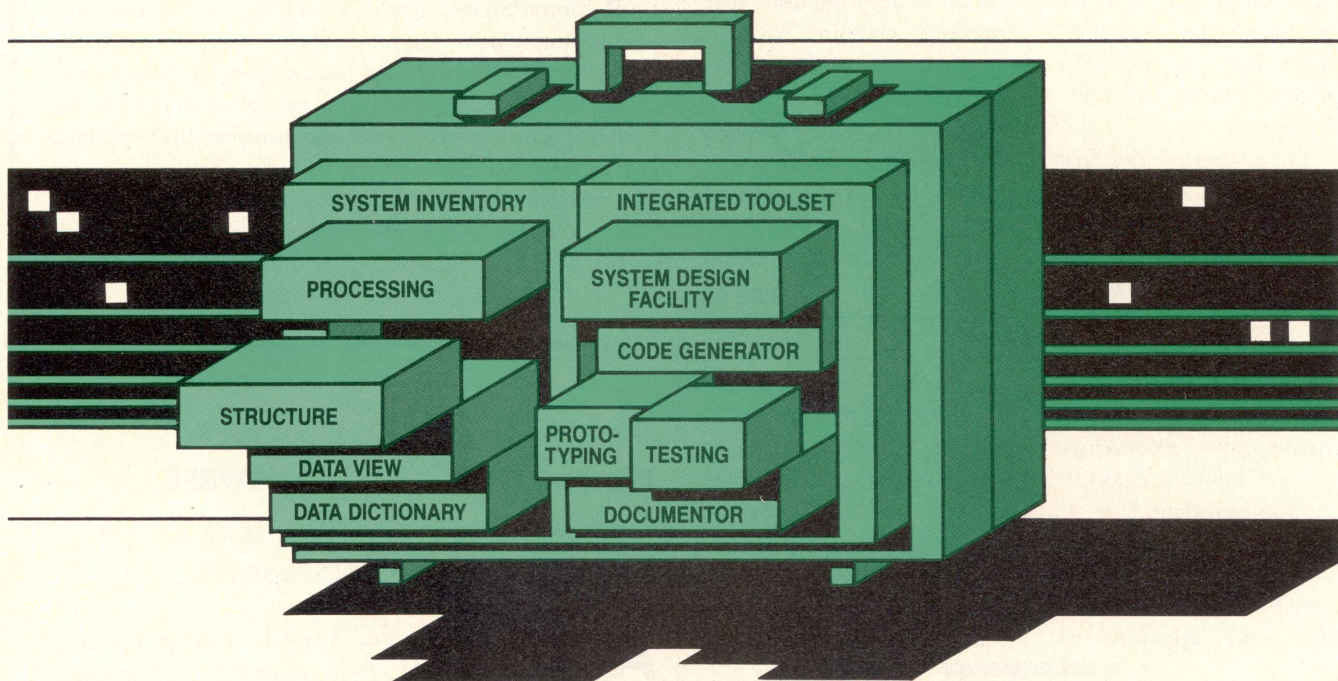
All systems are based on the HP 9000 Series 800 family of computers running the HP-UX operating system.

The Infostat Hospital Information and Control System (HICS), a fully integrated fourth-generation system, will be used for admission/discharge/transfer, patient accounting, medical records, utilization review, order entry/result reporting, pharmacy, accounts payable, payroll, human resources, general ledger, cost accounting and electronic claims. The system was installed on HP 9000 Models 850S and 825S computer systems.





## The application builder for the HP3000



## Our open and shut C.A.S.E.\*

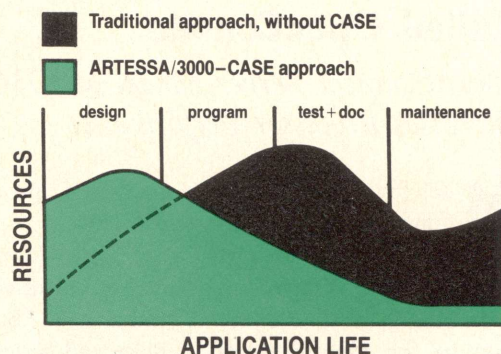
\*Computer Aided Software Engineering

### ▼ Can you afford to...

- tie up 80% of your resources on maintenance?
- finish projects up to 100% over budget and behind schedule?
- lose business opportunities because of obsolete or faulty applications?
- pay for costly "run-time support" for programs that "crawl"?

### ▼ When you can have today...

- **QUALITY ENGINEERED** applications, designed to accommodate future changes now.
- **INCREASED PRODUCTIVITY** in development, through re-usable components and a powerful set of tools.
- **USER SATISFACTION** with easily maintainable, reliable and highly featured applications.
- **PERFORMANCE** that only compiled COBOL can give, at *no extra cost*.



**Call or write today RAET 1-800-338-3772**

Quality Consultants, Inc., 1775 The Exchange Suite 140, Atlanta, GA 30339

New England  
**Wescom Systems, Inc.**  
(617) 769-4344

South East  
**Quality Consultants, Inc.**  
(404) 980-1988

Mid West  
**O'Brien Downs Systems, Inc.**  
(513) 891-9300

South West  
**Information Systems Professionals, Inc.**  
(714) 778-1818

Canada  
**COA Computer Systems, Inc.**  
(416) 333-0611

Australia  
**Field Technologies Pty. Ltd.**  
(03) 417-5661

Belgium  
**NV RAET Belgium SA**  
(02) 720-9060

UK  
**Assyst Computer Services Ltd.**  
(0525) 38 26 26



## HP 9000 Series 800 Systems Receive X/Open Certification

*HP First To Announce  
Compliance With The X/Open Standard*

**H**ewlett-Packard announced that all 11 HP 9000 Series 800 computer models have received the X/Open brand and certification.

HP is among the first computer manufacturers to announce compliance with the X/Open standard.

X/Open branding assures software-application portability for UNIX systems. X/Open is an internal consortium of 19 open-systems companies developing the Common Applications Environment.

X/Open created the verification and branding program to provide computer and application-

software vendors with a means of assuring users that products claiming X/Open compliance meet the specification outlined in the X/Open Portability Guide. Systems and software applications fully compliant and displaying X/Open brands require only basic recompilation of the applications to achieve portability.

HP 9000 Series 800 computers are based on HP Precision Architecture (HP-PA) and run on the HP-UX operating system. The family includes five high-performance single-user workstation models and six multiuser UNIX-system models.

## Mitek Products Now Called OpenConnect

*OpenConnect Server Model M2030-256  
Increases Processor Performance*

**M**itek Systems Corp. announced that its products now are available under the new name OpenConnect. Mitek's latest introduction to the OpenConnect product line is the OpenConnect Server Model M2030-256.

The M2030-256 supports 256 sessions and features

increased processor performance.

OpenConnect products provide bi-directional communication between IBM hosts and systems like VAX, AT&T, HP, IBM PC's, Apollo, Sun, Tektronix workstations and others.

Contact Mitek Systems, 2033 Chennault Dr., Suite 100, Carrollton, TX 75006; (214) 490-4090.

**Circle 370 on reader card**

## IISI Contracted By Tupperware International

*Works Closely With Cardinal Data Corps*

**I**nnovative Information Systems Inc. (IISI) has been contracted by Tupperware International to customize and implement Cardinal Data Corps financial and distribution packages and add electronic data interchange capabilities between Cardinal modules and remote sites. IISI is a full-service systems consulting firm specializing in the HP 3000 systems including Spectrum and its associated third-party products.

Contact Innovative Information Systems Inc., 63 Nahatan St., Norwood, MA 02062 (617) 769-7511.

**Circle 372 on reader card**

## Access Technology Offers New Spreadsheet Software

*20/20 Available For HP 3000,  
9000/800 Series Minicomputers*

**A**ccess Technology, Inc. developer of 20/20, an integrated spreadsheet software package for multiuser computers, announced that it has entered a new market with the availability of 20/20 for Hewlett-Packard's 3000 and 9000/800 Series of minicomputers.

20/20 offers advanced spreadsheet, graphics, data management and consolidation facilities. 20/20 has an easy-to-use English word command menu interface, on-line context sensitive help and tutorials, a conversion facility that allows 20/20 to import and export Lotus 1-2-3 files, and more than 60 functions for cable look up, regression analysis and statistical and string manipulation.

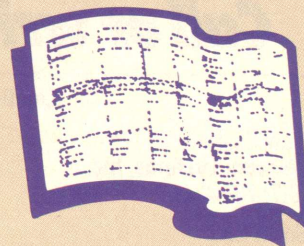
20/20 offers many

features including graphics support for HP graphics terminals, print report facilities and model password protection and more.

20/20 Release 2.2 is available immediately for HP 3000 users at prices ranging from \$2,800 for the Micro LX to \$12,800 for the 3000/950. For 9000/800 users, prices range from \$1,800 for the 9000/825 to \$6,800 for the 9000/850.

Contact Access Technology Inc., Two Natick Executive Park, Natick, MA 01760; (508) 655-9191.

**Circle 368 on reader card**







# HP 330/350/370 Users. Imagine Spending Less For More Memory!

If you have (or are considering buying) an HP Model 330, 350 or 370 computer, don't do another thing until you talk to Infotek! Chances are you're going to need more memory to run UNIX or memory-intensive applications like CAD and graphics. So, why spend more than you have to? And why get a short warranty when you can have a full two years?

Infotek EM Series memory

gives you an economical way to bring your computer to maximum memory capacity. Select:

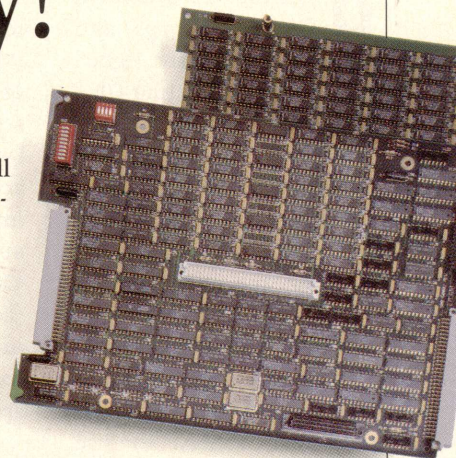
- EM 300: 4MB RAM controller board
  - EM 300 + 4: 4MB add-on board
  - EM 300 + 12: 12MB add-on board
- all at substantial savings.

Infotek is the world leader in enhancement products for HP workstations. We're known for the same kind of quality

you expect from your computer—so you can buy with confidence. Call today to order your additional memory—for less from Infotek.

**(800) 227-0218.** Or  
in California  
**(800) 523-1682.**

Infotek Systems, 1045  
S. East Street, Anaheim,  
California 92815,  
(714) 956-9300,  
TELEX 678870,  
FAX: (714)  
758-0289.



**INFOTEK  
SYSTEMS**



## Pantechnic Distributes COMPUMED

*Automated Medical Billing System  
Operates On HP 3000*

**P**antechnic Inc. announced its distribution of COMPUMED, an automated medical billing system for the HP 3000.

COMPUMED features both electronic claims transmission and electronic payment posting, eliminating paperwork on all assigned claims. The system enables doctors and administrators to obtain control over a clinic's funds by on-line capture of all charge and payment information. Detailed service analysis reports provide a means for increasing doctor efficiency. When COMPUMED is in-

tegrated with TEXTPRO, Pantechnic's word processing system, collection letters and service reminders are automatically generated, helping to increase clinic revenues.

COMPUMED also provides fully-integrated accounting systems for clinics. COMPUMED runs on all models of the HP 3000 and uses the HP700/92 as a workstation.

Contact Pantechnic Inc., 89 Mountain Valley Rd., Oakland, CA 94605; (415) 451-2381.

**Circle 371 on reader card**

## HP And DISC Sign Corporate License Agreement For OMNIDEX

*Gives All HP Sites Ability To  
Use OMNIDEX To Index Information*

**D**ynamic Information Systems Corp. and Hewlett-Packard have signed an agreement granting HP a corporate license for the internal use of DISC's OMNIDEX Information Management System software.

For the past several years, OMNIDEX has been the basis for HP's Response Center information system. This agreement gives all HP sites the ability to use OMNIDEX to index information for fast and flexible retrieval.

Included in the agreement is the entire OMNIDEX IMS product line consisting of OMNIDEX (multiple field, set and keyboard retrieval), IMSAM (sorted sequential access), OMNIQUIZ (direct interface between OMNIDEX and QUIZ from Cognos Corp.) and OMNIVIEW (Lotus 1-2-3- and add-in giving direct access to IMAGE databases from within the spreadsheet).

Contact Janet Eden-Harris, DISC, 910 Fifteenth St., Suite 610, Denver, CO 80202; (303) 893-0335.

**Circle 377 on reader card**

## Eurodata Expands Maintenance Services

*Offers 30-Percent Discount*

**E**urodata Inc. (Ottawa, Canada) recently announced the expansion of its hardware maintenance services to include Toronto and the surrounding area.

Eurodata Support Services offer maintenance on the complete line of Hewlett-Packard computer systems, peripherals, workstations and terminals, from offices in Ottawa, Montreal and now, Toronto.

Local parts and personnel allow Eurodata to provide contractual coverage including four-hour and next-day response, bench repair and time and materials services.

Contact Eurodata Inc., 2574 Sheffield Rd., Ottawa, Ontario Canada, K1B 3V7; (613) 745-0921.

**Circle 376 on reader card**

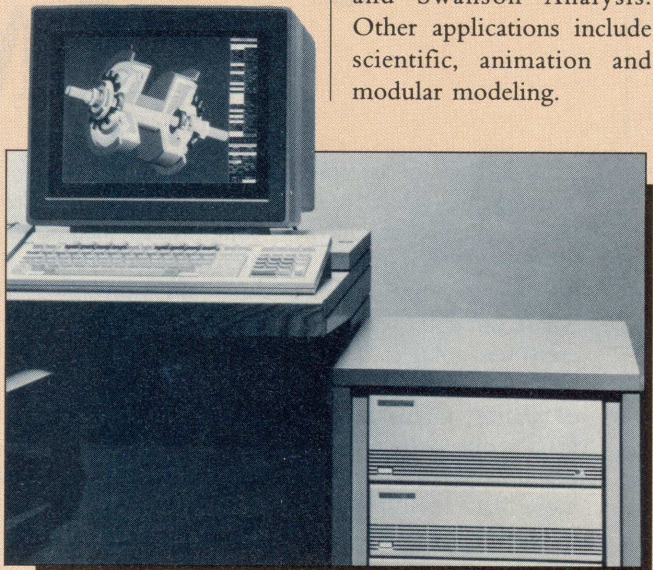
## HP Introduces New 3D Graphics Workstation

*Entry-Level Workstation Under \$15,000*

**H**ewlett-Packard has introduced an entry-level 3D-graphics workstation. At a U.S. list price of \$14,900, the Model 340SRX delivers all the benefits of HP's high-performance SRX graphics architecture. The new model 340SRX is source- and

object-code compatible with the existing HP 9000 Series 300 computers.

A broad range of 3D mechanical CAE and mechanical CAD applications is available from such vendors as SDRC, McDonnell Douglas, PDA Engineering and Swanson Analysis. Other applications include scientific, animation and modular modeling.



*The HP 9000 Model 340SRX from HP handles 3D mechanical CAE/CAD tasks.*



# BREAKTHROUGH PERFORMANCE!!

**IMAGINE** . . . A software package, for \$6K or less that can make your current H P 3000 run twice as fast and give you the performance of a \$200K C P U upgrade.

RunningMate's Performance Partners - **I/O Mate** and **SortMate Plus** can cut your disc I/O and sorting time in half for applications and report writers too numerous to list.



- No source code changes!
- Installs in seconds!
- . . . Give us a call for a consultation about your performance bottleneck.
- 800/628-8030 (In CA)
- 800/824-9046 (Out CA)
- 916/622-0630 (Direct)
- FAX# 916/622-0738
- P.O. Box 160488, Sacramento, CA 95816

(Don't forget to ask for your **FREE** Running Mate action poster.)

## RunningMate™

### THE PERFORMANCE PARTNER

CIRCLE 156 ON READER CARD



## Bell-Northern Research Awards HP \$11.5 Million Contract

*Will Supply HP 9000 Engineering Workstations*

**H**P (Canada) Ltd. was awarded a \$11.5 million contract to supply a minimum of 500 HP engineering workstations to Bell-Northern Research (BNR), Ottawa.

The contract includes HP 9000 Model 360MH engineering workstations, peripherals, software, file servers, network components, training and installation.

BNR is making the investment to accelerate soft-

ware development for product design of switching systems for Northern Telecom. The contract enables BNR to move its computer-aided software engineering (CASE) applications from mainframe computers to distribute HP workstations using standard telephone wiring for high-speed data communications.

Initial orders cover 360 systems for use in Canada, the U.S. and the United Kingdom.

## Relational Technology Forges Marketing Alliances

*Strengthens Relationship With HP*

**R**elational Technology Inc. strengthened its program of strategic alliances by forging a two-prong relationship with HP.

Relational's INGRES relational database management system (RDBMS) has been selected by HP as one of the third-party software packages being offered under the HP loaner program. At the same time, it was announced that Relational Technology was named an HP national account and INGRES would be supported by HP's sales and marketing staffs.

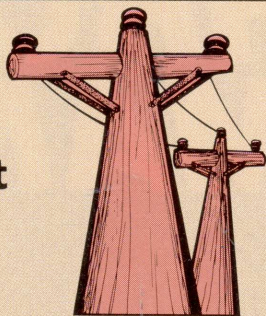
Under the program, prospective UNIX customers

receive HP 9000 Series 800 Precision Architecture midrange computer for evaluation for one year.

The agreement is part of HP's Solutions Marketing Program. Under the program, HP will dedicate fulltime sales and marketing staff to sell INGRES software and tools to HP customers with a requirement for a relational database solution. The full line of INGRES products is covered under the agreement.

Contact Relational Technology Inc., 1080 Marina Village Pkwy., Alameda, CA 94501; (800) 4-INGRES.

**Circle 374 on reader card**



## CCC Becomes New VAR Of HP PCs

*Combines FutureSource Technical Software With HP Vectra QS/16 PC*

**C**ommodities Communications Corp. (CCC), the developer of a technical-analysis trading tool, has been named a HP value-added reseller (VAR).

CCC will add its software, FutureSource Technical, to HP Vectra QS/16 PCs before offering the package to traders, brokers and market analysts.

The combined system of FutureSource Technical and HP Vectra PCs supplies

the power needed to run hundreds of studies dealing with futures contracts, foreign exchanges and options in real-time, plus the speed required to receive technical signals quickly and clearly.

FutureSource Technical requires a minimum PC configuration of an HP Vectra QS/16 PC with 2-MB of random-access memory, a 40-MB hard disc drive and a video graphics adapter.

## Sunrider Spends \$3 Million On Q-CIM, HP Products

*Purchases Process Manufacturing Software And HP-PA Minicomputers*

**S**unrider International, a manufacturer of food and herbal-care products, has purchased process manufacturing software from Q-CIM Development Laboratories and HP Precision Architecture (HP-PA) minicomputers valued at more than \$3 million.

The software, Q-CIM, which runs on HP 3000 minicomputers offers such features as quality-controlled shipments, total-lot traceability, shipments that help eliminate buy-backs, yield accountability in materials-requirement planning and formula-based bills of materials.

Q-CIM also incorporates financial applications from Collier-Jackson, in-

cluding modules for accounts receivable and general ledger.

This month an HP 3000 Model 950 will be installed in the Torrance, CA plant. Later this year, Sunrider distribution plants in the Far East including Bangkok, Taipei, Hong Kong and Kawasaki, Japan will receive HP 3000 Model 925 minicomputers.

**Note:** If you have any questions regarding a Hewlett-Packard announcement mentioned in *News & Trends*, please contact the Hewlett-Packard sales office listed in the white pages of your telephone directory.



# What's The Last Thing That Comes To Mind When We Say Spreadsheet?

Mention "spreadsheet" to a lot of people, and you can see the wheels turn a total of once. For them, spreadsheet equals PC.

Pity. For as many of you will soon discover, the HP™ 3000 running MPE is an *ideal* spreadsheet platform. Especially when the spreadsheet is 20/20™.

Developed by the leading supplier of spreadsheets for multi-user computers, 20/20 is 1-2-3™-like in the way you use it. But it's more useful.

With 20/20, you and your people can create and share models of virtually unlimited size. 20/20 supports HP graphic devices, and integrates tightly with other applications. It also supports PC's as terminals and runs under MS-DOS and UNIX™.

So you can create a budget on the 3000 and distribute it to department managers running PC's to do their projections. Then the whole thing can be consolidated into a corporate-wide forecast on the 3000.

As for all those Lotus files you presently depend on—20/20 reads and writes them.

Our Evaluation Kit is proof of 20/20's advantages. To order one, call 508-655-9191. Or write Access Technology, Two Natick Executive Park, Natick, MA 01760.

Access  
Technology  

---

20/20™

CIRCLE 101 ON READER CARD

© 1988, Access Technology, Inc.  
The following are trademarks: 1-2-3, Lotus Development Corp., HP 3000 and 9000, Hewlett-Packard; UNIX, AT&T Bell Laboratories.





## SIGSTAT, New Graphics And Statistics Software

Significant Statistics has announced that its graphics and statistics software (SIGSTAT) for HP MS-DOS systems now runs on the HP 9000 Series 200, 300 and 800 systems under the HP-UX operating system.

SIGSTAT's easy-to-use graphics are based on the New S Package developed at AT&T Bell Labs. Simple to complex custom graphics are produced for a wide variety of graphic devices. Also, New S allows the addition of new functions and graphic device drivers through its high-level, expression-based language.

SIGSTAT's statistics are an extension of the BMD package developed originally at UCLA. The 100 plus programs include univariate and multivariate analysis of variance and covariance; regression, cluster, discriminant and factor analysis; time series and more.

Significant Statistics also provides professional statistical consulting across a broad range of applications by members of the American Statistical Association. Individual projects as well as long-range planning are included.

SIGSTAT's graphics and statistics modules are available under HP-UX for a one-time purchase price of \$2,000 separately, or \$3,000 together. Source code for the statistics module is an additional \$1,000. Contact Significant Statistics, 3336 North Canyon Rd., Provo, UT 84604; (801) 377-4860.

Circle 399 on reader card

## Security Station Provides Micro Security

Data-MATE Inc. has introduced Security Station, designed to double as a space-saving workstation and physical security storage for microcomputers and printers.

Security Station is large enough to accommodate the largest personal computers

such as the Zenith 248, the Wang PC and virtually any other computer available. A doorlock system utilizing a hasp design accepts a GSA-approved three-position-combination padlock, meeting Department of Defense requirements for the physical security of secret data stored on non-removable hard discs.

Contact Bill Housh, Data-MATE Inc., P.O. Box 408, Nashua, NH 03061-0408; (603) 882-5142.

Circle 400 on reader card

## GPS CUSTOM Software Redefines 'User-Friendly'

GPS CUSTOM Software Co. has introduced a fifth generation custom program, which defines "user-friendly."

GPS has made available a software package that requires no programming code. The software package, GPS CUSTOM, allows you to develop application software from application level.

The system uses a windowing technique

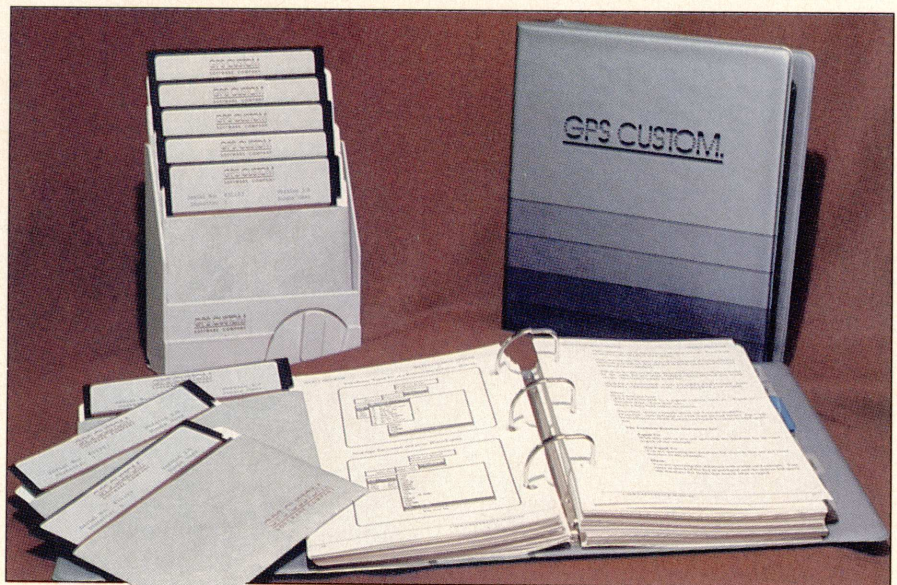
and an easy-to-use visual interface. The need to write programming code has been eliminated. GPS CUSTOM provides the ability to build and maintain a complete system that includes a relational database, a full-function word processor, a comprehensive report generator, necessary printing management routines to generate documents and reports and an application creator.

The system also includes SQL interfaces, a modular framework, a multilevel data security system and an auditing system. For more information contact Dennis Lopez, GPS CUSTOM Software Co., 2700 N.E. Loop 410, Suite 440, San Antonio, TX 78217; (512) 590-0743.

Circle 398 on reader card

## HP Introduces New Interpreter Software

Hewlett-Packard has announced a new software package for the HP 4972A local-area-network (LAN) protocol analyzer. The software package decodes the U.S. Department



*GPS CUSTOM requires no programming code.*



of Defense's transmission-control protocol and internet protocol (TCP-IP).

The HP 18221A TCP/IP protocol interpreter will help network managers understand the operation of IEEE 802.3/Ethernet networks that have TCP/IP traffic.

LAN managers are able to analyze the network's protocol operation by capturing and displaying data in a decoded format for troubleshooting and network tuning. For inter-vendor LAN environments, this analyzer can decode the TCP/IP protocol information in a mnemonic display.

### ATI's LC-6026 Provides Increased Throughput

A 26-page-per-minute (ppm) laser printer that increases throughput of complex text and graphics by up to 350 percent over comparable printers, allowing them to run at the true rated speed, has been introduced by Advanced Technologies International.

The LC-6026 incorporates ATI's recently introduced LC-6000 controller. It can generate text at the 26 ppm ideal, and complex graphics can be generated.

The product is designed for high-volume users in such fields as law, insurance, finance, CAD/CAM or aerospace. Output is 300 x 300 dpi.

The product is available for \$24,900. Contact John Goetz, Advanced Technologies International Inc., 355 Sinclair-Frontage Rd., Milpitas, CA 95035; (408) 942-1780.

**Circle 397 on reader card**

### Transfer Spoolfiles With SPOOL 9000

Holland House has announced a new spooling product for the HP 9000 Series. SPOOL 9000 transfers spoolfiles between the HP 9000 and the HP 3000 machines. Spoolfile transfer is bi-directional so that spoolfiles can be sent to or received from the HP 3000. This product works in conjunction with Holland House's product UNISPOOL that runs on the HP 3000.

For more information contact Joe Copeland, Holland House, Box 1749, Beeville, TX 78102; (512) 287-3417.

**Circle 394 on reader card**

### DTS Announces New Font Manager

DTS announced the introduction of OUTLINE, a new German-designed font manager. Although it's primarily aimed at the



*ATI has introduced the LC-6026, a high-speed laser printer.*

many users of HP printers, it can be used with any other printer that has an HP emulation.

OUTLINE works with all major desktop publishing systems such as Word, PageMaker, WordPerfect and Ventura, and supports all softfonts currently available for the HP LaserJet. It also allows you to modify fonts in hundreds of different ways.

OUTLINE retails for \$495. The price includes the standard proportional fonts, Tmsrn and Helv, available from HP as well as a Symbol font. A manual is also included. Contact Digital Type Systems Ltd., 38 Profile Circle, Nashua, NH 03063; (603) 880-7541.

**Circle 396 on reader card**

### Terminal Emulation For X Windows

Optimation Inc. has announced its new line of terminal emulators for X Windows under HP-UX for the HP 300 Series workstations. These new emulators provide both text and graphics emulation for DEC, HP and Tektronix terminals while running in the new industry-standard X Windows.

These emulators meet the growing requirement of workstation users to be application-level compatible with a variety of remote hosts, such as VAX, HP 3000, IBM and others.

Optimation's emulators support LAN and RS-232 phone line communications. They also include file transfer between the workstation and the remote host, a built-in line analyzer and hardcopy output. All HP 300 models are supported, including the new Turbo SRX and the Model 340.

The terminals emulated for HP are the HP 2392 with block and format modes and the HP 2397 with HP's color graphics system; for DEC, the VT 220 with special fonts and downloadable function keys, and

the VT 241 with DEC's color ReGIS graphics; for Tektronix, the 4010 and 4014 with the capability of doing PLOT10 graphics. For further information contact Optimation Inc., 2510 Middlefield Rd., Redwood City, CA 94063; (415) 365-9880.

**Circle 393 on reader card**

### MicroPlot 55A Series Offers More Memory

Intelligent Interfaces has introduced MicroPlot 55A Series Buffers that will store data produced from any IBM PC, compatible or other RS-232 serial interface system and transfer it for processing by plotters, printers or any other output peripheral. The MicroPlot Series is capable of operating in the HP mode protocol, allowing Hewlett-Packard to be individually configured.

The new models available feature data transfer speeds greater than 100 KBps and expandable buffer memory to eight MBs.

Intelligent Interfaces offer a minimum one-year warranty and a 30-day money-back guarantee.

For more information contact Robert Jarvis, Intelligent Interfaces Inc., P.O. Box 1486, Stone Mountain, GA 30086-1486; (404) 381-9891 or (800) 842-0888.

**Circle 387 on reader card**

### HP Enhances MRP II Package

Hewlett-Packard has released a version of HP Manufacturing Management II (MM II) software for manufacturing-requirements planning (MRP II) applications.

The expanded functionality of the advanced version of HP Materials Management module addresses the needs of process and repetitive manufacturers who purchase HP MM II.

HP Materials Management, the founda-



tion module of the HP MM II, will be sold as HP Materials Management/Advanced Version, which is enhanced for process- and repetitive-manufacturing environments. It includes the following new functions: backflush for recording the consumption of raw materials and the manufacture of products; alternate parts to indicate the use of alternate recipes or components and to indicate when alternate products were produced; by-products for planning production and recording use; and selective MRP for anticipating the impact of changes to orders or requirements.

## QuickSpec Broadens Use Of PCs

Meta Systems has announced QuickSpec, a PC/Windows CASE tool for accessing and controlling an object-oriented Repository.

QuickSpec allows systems analysts and designers user their PCs to enter, edit and review project information and specifications in an object-oriented CASE repository.

Information from all phases of the

systems development life cycle, from requirements through maintenance, can be represented in this one Repository. The Repository uses a representational model that is broader than that being proposed under IRDS.

QuickSpec's Repository can maintain information from different methodologies and diagram types. It's capable of integrating information from the most popular graphic-oriented tools.

Quick-Spec enforced an organization's own methodology by tailoring the objects in the Repository and by maintaining Repository integrity.

Meta systems offers compatible Repositories at all levels for the individual analyst, for the system component group and for the project as a whole. QuickSpec provides import/export links to Meta Systems host-based CASE tool PSL/PSA. Individuals or groups can work with their own portions of the project-wide PSL/PSA Repository. PSL/PSA runs on many host environments, including Digital VAX/VMS, IBM VM/CMS and IBM MVS/TSO.

QuickSpec is priced at \$3,500. Contact Meta Systems, 315 East Eisenhower Parkway, Suite 200, Ann Arbor, MI 48108; (313) 663-6027.

**Circle 385 on reader card**

## Instructional Video Tape From Personalized Software

Personalized Software (Fairfield, IA) has announced a five-hour set of three VHS video tapes demonstrating all the fundamentals of using the Hewlett-Packard 110 Portable and Portable Plus computers.

The instruction goes through every procedure necessary to use the HP Portables including some tips that are not covered in the user manual.

The price for the three tapes is \$150. For more information contact Personalized Software, P.O. Box 869, Fairfield, IA 52556; (515) 472-6330.

**Circle 392 on reader card**

*Continued on page 84*

## A Computer Room Disaster is Unlikely

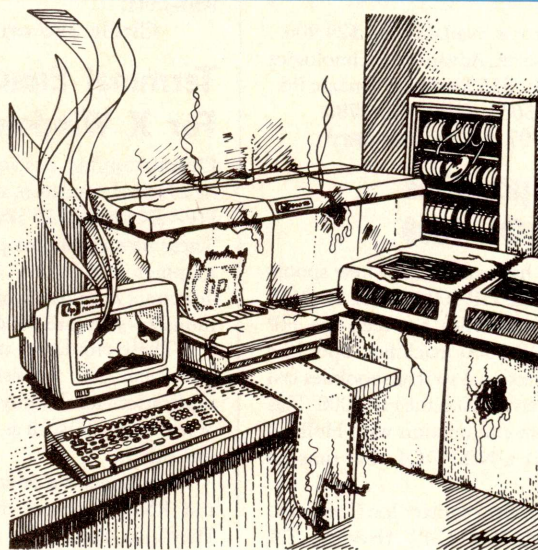
CSI offers HP 3000 users reliable Disaster Recovery Services including:

- **Hotsite:** A fully equipped computer facility with office space and equipment
- **Freight-Ready:** Packaged systems, ready for immediate shipment
- **Configurations:**  
Micro 3000  
Series 48  
Series 58  
Series 70



Ask us about  
"DP-AID,"  
a PC-based  
planning tool!

Call today for a complete offering or let CSI configure a system to suit your needs.



## But What If...?

**Computer Solutions, Inc.**



NJ (201)672-6000 • IL (309)379-6000

CIRCLE 158 ON READER CARD



# Classic Software for Yesterday, Today & Tomorrow

25,000  
INSTALLATIONS  
WORLDWIDE

**MCBA Release 1**  
1975  
MCBA introduces the first packaged accounting software for minicomputers.

**HP COBOL II Release 1**  
1981  
MCBA releases its accounting software packages for the HP 3000.

**MCBA CLASSIC SOFTWARE**  
HP COBOL II, Rel. 3  
1989  
MCBA provides MRP II system for HP's new Precision Architecture computers.

1989

MCBA has been setting standards of quality and reliability in business software since the early days of the minicomputer. Computers have come a long way since 1975 and MCBA has been right there every step of the way. Continually enhancing and expanding its top-notch business software systems to meet users' changing needs.

Today, companies rely on **MCBA CLASSIC Accounting, Distribution and Manufacturing Software™** for the HP 3000 to help increase productivity, save time and money, and plan for tomorrow.

Discover why thousands of users find MCBA CLASSIC Software as indispensable as their HP 3000s. Complete and return the coupon below or call the MCBA office nearest you.

Reseller inquiries are invited.

Send me info on MCBA CLASSIC Software in HP COBOL II:  
☐ Accounting; ☐ Distribution; ☐ Manufacturing.

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

Phone (\_\_\_\_) \_\_\_\_\_ Best time to call \_\_\_\_\_

I am a software:

☐ User; ☐ Reseller; ☐ Consultant (only).

Mail to MCBA Headquarters\*

HPP489

## MCBA CLASSIC SOFTWARE™

*The Standard in Business Software Solutions™*

\*Headquarters: 425 W. Broadway, Glendale, CA 91204-1269 (818) 242-9600

Branch Office: 120 Wood Ave. S., Suite 300, Iselin, NJ 08830-2709 (201) 548-6600

(Serving AL, CT, DC, DE, FL, GA, MA, MD, ME, MS, NC, NH, NJ, NY, PA, RI, SC, TN, VA, VT, Caribbean, West Indies, and Europe)

Copyright © 1988, 1989 by MCBA, Inc. All rights reserved. MCBA is a registered trademark and MCBA CLASSIC Software and The Standard in Business Software Solutions are trademarks of MCBA, Inc.





# Reflection... Now you see it, now you don't. No



**Not quite magic,** but almost as good. Reflection's unique multitasking feature turns your PC into a double-duty workstation. Only Reflection lets you **hot-key** between your terminal session and a DOS application.

Not bad! But what makes this feature like magic is the way Reflection continues to execute

commands, perform file transfers, and monitor the host session, even while it's in background. Improve your productivity by getting two things done at once.

Reflection does more and uses less memory than the competition. And Reflection lets you connect to your host through tried-and-true RS-232 or a variety of PC networks,

including Novell and even Digital's LAT.

Reflection has set the standard against which all others are measured. Over 250,000 users worldwide enjoy the advanced features and superior support they get when they choose Reflection.

**Save money and save memory.** Trade-up to Reflection and

Reflection is a registered trademark of Walker Richer & Quinn, Inc. Other brand and product names are trademarks of their respective holders.



# Now you see it, now you don't. Now you



*Hot-Key to Reflection 1 PLUS, HP 700/92 and  
DEC VT102 emulation, or Reflection 7  
PLUS, which adds HP 2627A color graphics.*

enjoy the benefits of multitasking.

Send us the manual title page from HP's AdvanceLink® or Terminal Program and a purchase order for \$125\*. We'll rush you a copy of Reflection® 1 PLUS or Reflection 7 PLUS and add you to our growing list of satisfied and productive customers. The comparison chart on the attached card gives you

more reasons to trade-up to Reflection today!

This trade-up offer is available from Walker Richer & Quinn and authorized dealers in Canada, Europe and Australia. For more information call Darcie Brintnall at (800) 872-2829 or (206) 324-0350.

Walker Richer & Quinn — with the commitment and resources to remain number one in PC integration technology.

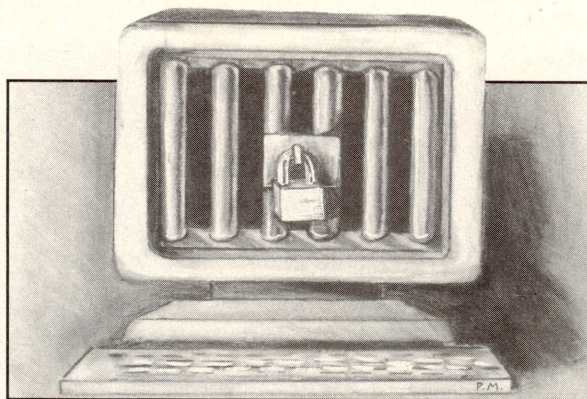
**Walker Richer  
& Quinn, Inc.**

2825 Eastlake Avenue East, Seattle, WA 98102  
(206) 324-0350, FAX: (206) 322-8151

\*Add \$8.00 for shipping. Washington purchasers add 8.1% sales tax. Prices quoted are U.S. only.

CIRCLE 142 ON READER CARD



*Is MPE Security Adequate?*

## Protecting Your Data

[By David L. Stanton]

**R**ecently, MIS directors have increased efforts toward preventing computer security violations. In an age of network interfaces,

CRTs and PCs have become an integral part of the daily operations of business and industry. The increased utilization of computers brings with it a need for improved access controls, protection of data and the prevention of system resource corruption.

Fortunately, most HP 3000 sites can establish security procedures utilizing existing MPE security features that provide some degree of protection. Surprisingly, many sites utilize the standard MPE features inappropriately, or in many cases, not at all.

Should you consider supplementary hardware/software security products? In order to make this determination, you should review your existing MPE security capabilities, coupled with an analysis of your specific site requirements to determine if additional security is warranted.

Where do most breaches of security occur? Studies indicate that most losses attributed to computer crime occur from within. A recent poll conducted by Ernst & Whinney (New York, NY) found that out of 390 companies interviewed, one-third reported some financial loss during the past two years. Out of those companies reporting losses, 22 percent said a breach of computer security had occurred. Further, 11 percent of those companies claimed losses of \$50,000 to \$1 million, and 18 percent reported losses less than \$50,000.

Computer-related audits have become policy within many corporations.



Establishing and maintaining defined security standards have become required functions of system managers. Clearly, site management can be held accountable for user violations resulting from inadequate or nonexistent security procedures.

However, overreaction to computer security problems

Passwords supplied with  
third-party software  
systems or those left  
on the system by HP  
personnel should be changed.

also can be costly. Recently, I visited a shop that implements and operates applications with a large number of users, but lacks a good and complete system security plan. A new project was planned to provide an application on a dial-in network that included the setup of a dedicated computer system, despite the fact that the existing system's capacity was fully capable of handling the increased processing load. The reason for the added computer was *solely* to prevent security violations. This plan was implemented because the shop lacked knowledge of MPE security and lacked confidence in the existing in-house security applications.

**E**VERY COMPANY'S SECURITY requirement is unique. Before defining a security plan, thoroughly review and analyze your company's specific security requirements. First, examine variables such as access methods, classes of data and the scope and nature of the user population. In addition, you should fully understand the MPE security features in order to utilize those features that provide appropriate protection.

If all security features are used indiscriminately without considering site needs, unnecessary barriers to convenient system use probably will result. For example, assigning passwords at the account, user and group level for every user probably is unnecessary. Also, ordering a second system to isolate one class of users from another is unnecessary.

Security requirements will vary depending on the applications, mixture of applications, configuration, physical environment and users. However, there is a common thread of discipline with respect to security that can be followed at all HP 3000 installations. These techniques can help establish a basic level of security that can be appropriate even as a system grows in size and number of applications. Over time, the following procedures may be supplemented but will continue

to be useful for as long as MPE is not significantly changed.

There are four fundamental security categories:

- Log-on protection from unauthorized users
- Restricted access to data and functions
- Special capabilities management
- Protection of the operating system and its resources

Log-on protection is the most important and most often required security element. Locked computer rooms are becoming less prevalent with the advent of high-capacity systems able to operate in an office environment.

If you consider your site too small to require log-on protection, consider this: Can the data in your system be safely contained in an open file cabinet? If not, the use of password protection is strongly urged. Larger sites with a mixture of user classes, with each class accessing different applications containing sensitive data, or sites with dial-in lines to systems containing sensitive data, certainly should utilize log-on protection.

Often, adequate protection can be obtained with a set of passwords at the user and account levels, which are chosen with some care and changed periodically. Account-level passwords are mandatory. User passwords also are recommended and can be maintained by a responsible account manager for each account.

Site management could assign the account passwords and the various departments could assign their own user passwords. In this manner, responsibility for security is at the department level. The user often avoids such responsibility, and in these instances, site management should try to reinforce the importance of this task.

Passwords must be reviewed on a regular basis and changed periodically. If each user's password is unique, then a single account password name or a limited number of names could be assigned. Accounts with System Manager (SM) capability, however, should always have a unique password. Account passwords maintained by site management should be changed en masse if system-wide security has been broken. If evidence indicates that someone with SM capability has obtained information, then you must assume that he knows every account and user password on the system. When this occurs, changing all account passwords should be done quickly, when no jobs or sessions are active.

Never leave commonly known passwords on the system. Passwords supplied with third-party software systems or those left on the system by HP personnel should be changed.

Several years ago, a security breach occurred at a timesharing service bureau utilizing an HP 3000 with approximately 36 ports. A knowledgeable HP 3000 user gained access to the system by using a commonly known HP CE password which had been left on the SUPPORT account.

The user logged on (dial-in port) under SUPPORT and installed in PUB.SYS a "Trojan Horse," a program with a name similar to an existing MPE system program file. When



executed, the program entered Privileged Mode (PM) and set a bit in a normally write-protected area of memory, yielding SM capability. In this way, he gained important SM capabilities and was able to obtain system passwords.

As soon as the break-in was recognized (console messages were conveniently sent by the user declaring security had been broken), the password for the SUPPORT account was changed. But the next day, the user again logged on under another account and repeated the same procedure and obtained passwords. For several successive days, he logged on using passwords he obtained the previous day. Of course, his continued success depended on the existence of an account/user combination that did not have passwords changed since his previous session. Therefore, if system security is broken, be sure to change at least all the account-level passwords.

Dial-in lines must have the device TYPE and SUB-TYPE correctly designated and the correct modem option setup so that when a user "hangs up," an auto disconnect occurs to trigger a log-off sequence. A serious breach of security can occur if a user dials in and is connected to an existing session. Utilizing software that logs off idle ports is not a satisfactory solution to this problem because a timely review of idle sessions does not occur. Generally, the solution can be found through the correct selection of port/modem configuration options.

## Restricted Access

ONE OF THE BEST WAYS to provide user restrictions is through the use of a menu type of program invoked by a User Defined Command (UDC) with auto connect and NOBREAK. The FOS doesn't include a MENU program. However, Hewlett-Packard and several third parties offer a selection of these programs.

Incorporating this type of security feature contributes toward a user-friendly environment in addition to providing good protection. Even within sites utilizing menu type of systems there are certain users who don't utilize menus (programmers, analysts, operators, etc.). In these instances, a good security foundation to underlie and supplement the protection of menus should be achieved by carefully protecting critical data files, programs etc., from access by unauthorized users.

With or without a menu system, the following procedures should be followed:

- Apply lockwords to all dangerous programs with PM access.
- Install passwords on all databases.
- Secure all "released" files.
- Limit the use of QUERY. A user with knowledge of the D/B password usually has only one system utility that will allow access to the D/B, and that is QUERY.
- Review each account and its intended use. Often system-

wide access is not required and the account access matrix can be adjusted to restrict access to only groups within the account.

If you do not utilize a menu system to enforce restrictions, there is a variety of MPE security features that can provide protection. For example, if sensitive data is maintained in an IMAGE D/B, and the existence of the D/B password is known only to selected technical support personnel, then the password can be supplied by the applications programs at run-time. This prevents users from accessing the data except via their programs. Such programs can be designed to include the use of the "WHO" intrinsic and only be executed by certain "USERS" matching an entry in an internal table of valid users.

## Special Capabilities

OF ALL THE SPECIAL capabilities, none is more important than SM capability. Only one account and one user should have SM capability. The group containing the job files that run with SM capability should be password-protected and have read access by creator only and execute access to allow users to stream jobs, but not examine them. For example, the group SYSJOBS in account SYS could be established with a group password, not assigned as a default group to any user and ACC=(R,W,L,A:CR;X:AC). Such an arrangement will allow users logged on under the SYS account to "stream" jobs residing in the SYSJOBS group, but not examine and determine passwords.

The SM account/user should have unique passwords known only to the system manager and perhaps one other person. Passwords can be kept in a sealed envelope and placed in a location known only to a few key people. If an emergency arises, passwords can be obtained.

Operators typically don't need to have SM capability, because they generally don't require access to sensitive data. Remember, execute access allows STREAM access. Operator (OP) capability should be made available with discretion, because this feature allows the performance of STORE/RESTORE functions.

Only those users who perform STORE/RESTORE functions should be issued OP capability. Also, unattended system consoles should be logged off. Such capability should not be readily available in an open office environment or in a computer room frequented by persons without a need for this capability.

## Resource Protection

NUMEROUS IMPORTANT SECURITY features are present as a direct result of the inherent design of the HP 3000. Password access protection, object reuse control, access protection and PM are several important security elements addressed in the HP 3000 design. Unlike many



other computer systems, the HP 3000 retains user authorization information, (passwords, usernames, capabilities, etc.) on disc in an area isolated from the "public" file directory and not accessible to the general user. Other systems tend to maintain this information as a file in the systems account.

Object Reuse is a term that describes the availability to a user of information, sometimes sensitive, that has been left over from a previous user in a blocking buffer, allocated but not yet written (by current user) sectors on disc, and data segments obtained at run-time. For files, the HP 3000 user can't, with standard capabilities, access allocated space in files beyond the "EOF" pointer. Some other computer systems apparently can permit access beyond the EOF pointer — a condition that has prompted highly secure government requirements to dictate that released disc space and blocking buffers be cleared after use (much system overhead can be devoted to this activity).

Separation of users from data can be accomplished by exclusion or inclusion. Exclusion by means of account/group access; i.e., all users outside the account containing the data are restricted to "read only" access; inclusion by means of a list of users authorized to access a data structure. This feature is not yet available on the HP 3000, but it can, to some extent, be affected by including a list of users in a program that at

run-time validates a user for access and then applies a password for access to a file or D/B.

Default file access at the account or group level should be limited to groups within the account only, not system-wide. Generally, the only system-wide access situations should be system libraries, and often only EXECUTE access is needed. Sometimes requirements may dictate that a group containing MPE data files be accessible to users outside an account. In this situation, assign a lockword/password and modify the applications to programmatically use the lockword/password.

For many HP 3000 sites, if standard MPE security features are utilized and reviewed on a regular basis, MPE can provide adequate security protection against unauthorized break-ins, data access violations, corruption of the operating system and related system resources. A few third-party software packages provide specific reports on MPE security utilization. For those sites requiring supplemental security features there are several third-party menu type of systems and password enhancement systems. For the most secure environments, a combination of all three techniques will be required. —David L. Stanton is president of Chestnut Data Systems, Philadelphia, PA.

Would you like to continue to see articles on this topic?

Circle on reader card  
yes 350 no 349

# "15 MINUTES? YOU GOTTA BE KIDDING!"

**LASERKEY**™ ...with only eight easy steps, you can produce high quality presentation materials with your laser printer\* in fifteen minutes or less.

LaserKey software comes complete with all the materials you'll need to produce overhead transparencies, signs, memos, labels and more!

Call or write for more information.

Arkwright Incorporated  
Main Street, Fiskeville, RI 02823  
1-800-942-5900

\* IBM PC® or compatible computer,  
Hewlett-Packard LaserJet Series II® or  
PostScript® Laser printer or compatible.

## Arkwright

Copyright © 1988 by Arkwright, Inc.  
All Rights Reserved.





Examining Emergency Procedures Can Increase  
Productivity In Everyday Operations

# DISASTER RECOVERY OPTIONS

[BY PEGGY KING]

**E**ditor's Note: At the NevCal conference in Reno last fall, James Depp, vice-president of UP TIME, (Sacramento, CA) gave a presentation detailing the pros and cons of eight options for disaster recovery. Depp defines a data processing disaster as an interruption of processing that causes extensive or total loss to operating facilities. This article is based upon his presentation.

Most businesses are already in the practice of storing backup tapes offsite in order to protect their programming effort and vital data from being wiped out by unforeseen events or a disaster. Protecting investments in software and data through remote storage of backup tapes is the first step in disaster recovery. However, a recovery plan is not complete unless there is a system available on which to load these tapes.

Some options to recover operations require no outside service to provide backup. These options include returning to manual operations, owning a "redundant" or backup system at another location, or having a reciprocal agreement with another organization. Companies that require disaster recovery services pay an outside source for this service. Outside source options include hiring a service bureau to handle data processing needs until the system can be replaced or restored, using the vendor's facilities, contracting with a service that provides either off site or relocatable recovery facilities, or having a service provide an empty shell.

**A**T FIRST GLANCE IT MAY seem that returning to manual operations is the simplest and least expensive way to process data and provide services when the computer system is shut down. But in reality it's difficult or impossible to revert to manual methods. In order to return to manual operations a business must be small and have low-



# If 37 people are waiting on you for a printout, tell them to "Just Do It Yourself"

Does every one come to you for their reports and printouts?

And they always want them right away? Now you can tell them to "Just do it yourself" with StarJet/3000.

No more waiting for printouts. And no expensive forms to change for each type of report.

StarJet/3000 is the business form software designed for users of Laserjet printers connected to the HP3000.

With StarJet/3000, anyone can direct their report or form output from the HP3000, or PC terminal, to a Laserjet rather than to a central printer.

It's the *only* Laserjet solution which combines *PC-based form design and file equation technology* in one single product.

Plus our new PrintJet companion program gives your forms style. It lets you format flat files using all the possibilities of the Laserjet. You can easily change fonts, print logos, signatures, pictures, boxed and shaded areas and lines. You can print bar codes, format

labels and generate multi-form reports.

PrintJet is a great companion program for formatting fourth generation language output. You

create instant forms without ever changing your existing HP3000 programs.

With StarJet/3000 you have immediate access to data from your programs, merged with the form of your choice.

Or download data directly from the HP3000 to your PC and design your report to your information, right on the screen.

And yes, for those of you who need help getting started, we have customer support standing by.

Send for more information today. Demo tapes also available.

Call now.  
512/346-0962.



## StarJet/3000 Software by APPIC



For a complete list of worldwide distributors call or write: APPIC-USA, Inc., 3600 North Hills Dr., Suite 131, Austin, TX, 512/346-0962  
APPIC-FRANCE, 123, rue de Petit-Vaux, 91360 Epinay sur Orge, 1-64 54 87 37

CIRCLE 161 ON READER CARD



volume transactions. In addition, there needs to be a core of employees who know how to replace computer operations with manual procedures. Most businesses that have had computerized operations for any length of time have procedures that are significantly different from a manual operation. Even if there are employees who understand how to implement up-to-date procedures manually, special provisions for hardcopy record keeping must be implemented. Although manual procedures can replace the data processing activities, there is no real substitute for the telecommunication capabilities provided by computers and networks.

Very few businesses can afford the loss of productivity they would suffer by operating without the data processing and telecommunications capabilities that a system offers.

Another low-cost alternative is for two businesses that have similar hardware configurations and who each have excess hardware capacity to enter into a legal agreement. This agreement would stipulate terms and conditions whereby both would share hardware in the event of a disaster.

This arrangement provides data processing capability at minimal expense, but reciprocal agreements become increasingly hard to maintain as the two businesses begin to grow

at different rates and acquire different hardware and software applications.

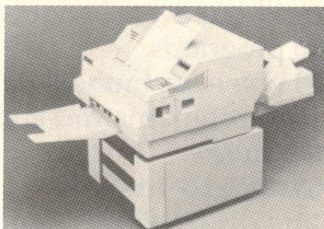
The parties involved in a reciprocal agreement must exchange information about what software applications they're using. If both businesses use any of the same software, members of the MIS department from each company need to decide upon unique file names to avoid conflicting directory entries and keep out of one another's files when the two companies are sharing a system. They also need to be sure they're using system resources in complementary ways.

Very few companies are able to continue a reciprocal agreement in the long run. In order to make these agreements work, the companies need to share their plans about acquiring new hardware and to renew which software operations are critical to their business. Many companies consider this confidential information.

Although it may seem most convenient to have a reciprocal agreement with a company in the same geographical area, such an arrangement increases the likelihood that both companies would be affected by the same disaster in a local area.

Another problem with sharing resources is that the two companies may need to process payroll or do other critical

## IMAGINE...



**Three  
12 PPM  
Printers in  
One for  
Only...**

**\$3,990**

**Dataproducts.**

The **LZR 1230** can concurrently support up to three computer systems while simultaneously emulating an HP LaserJet Plus, Epson FX80 and a Diablo 630; eliminating the need for three separate printers.

With a 250 sheet tray; the **LZR1230** has as options a double bin cassette feeder for an additional 500 sheet capacity and a fully functional envelope feeder.

Intelligently priced consumables and a 600K page life cycle produce the lowest cost per page output available. The \$3,990 list price makes the **LZR1230** the most economic and ergonomic printer on the market.

The **LZR1230** is available from:

**S/S/T**

305 Broadway, NYC 10007  
(212) 964-9600 Fax. (212) 233-4678

\*Ask about Dataproduct's Adobe Postscript and Appletalk printer.

## TED DASHER & ASSOCIATES

4117 2nd Ave. So.  
Birmingham, AL 35222  
FAX #205-591-1108  
(205) 591-4747

### WE SPECIALIZE IN HP 9000

Series 200 and 300  
Also 80 and Series 100

LARGE DISCOUNTS &  
IMMEDIATE DELIVERY

### SPECIAL ON PLOTTERS

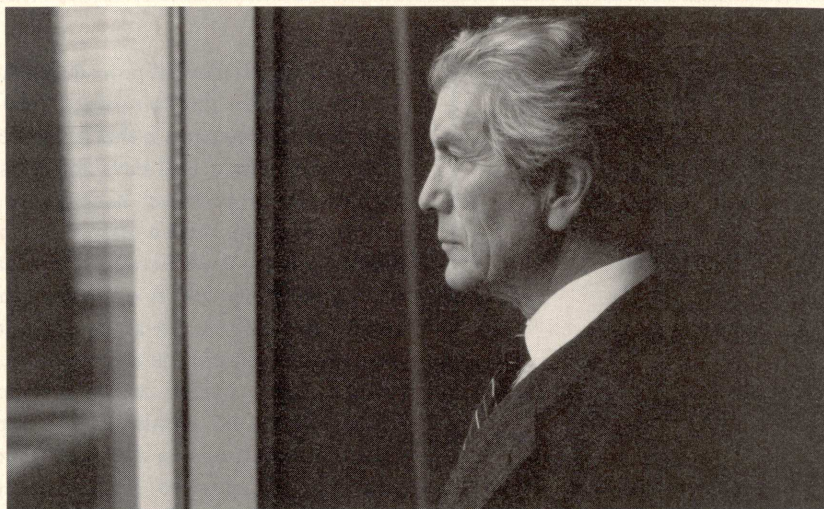
7470A	7570A
7440A	7595A
7475A	7596A

**30 Day Warranty On All Equipment**

CIRCLE 145 ON READER CARD

CIRCLE 196 ON READER CARD





# Why you should agonize over your choice of financial software.

Face it. There's a lot more riding on your choice of business systems than the price of the software. Like the effective financial control of your organization. And your bottom line.

So look carefully and thoughtfully. A little time spent up front can save you years of aggravation and hundreds of thousands of dollars down the road. Not to mention your job.

Know your software vendor. Remember, you're not just buying software, you're investing in a long term relationship. Keep in mind all accounting software *is not* created equal. Be sure the package you select is right for your organization's requirements.

After all, you're going to have to live with your decision for a long time to come.

Finally, we invite you to get to know Mitchell Humphrey and Co. Spend time with the CPAs who make up our support team. Work with our software. And by all means talk to our customers.

Find out why after 11 years and hundreds of installations, not a single one has ever had to replace our financial software with a "better" system.

To take a closer look at what our software can do for your organization, call Ken Benvenuto at 800-237-0028. Or write us at 11720 Borman Drive,

St. Louis,  
Missouri 63146.

**MITCHELL HUMPHREY & CO.**

*Mitchell Humphrey and Co. software is designed exclusively for Hewlett Packard 3000 and Spectrum series mini-computers.*



Since the early '80s there  
have been businesses  
offering disaster  
recovery services  
for HP 3000 systems.

operations at the same time. Any agreement should work out detailed provisions about who controls the system and the priorities for running various applications during the period when the two companies are sharing resources. The effectiveness of reciprocal agreements is limited to smaller operations and short-term emergencies.

Having a redundant system is another solution that does not involve an outside service agency. Large companies that require immediate and complete restoration of data processing activities sometimes choose to purchase and maintain an identical system at a remote location. This method is the most costly approach to disaster recovery, but it is also the most full-service solution. A company with a completely equipped site at a separate location has a controllable, readily available and completely accessible system that is less likely to be affected by the same disaster. If no employees are affected by the disaster, it is possible to return to business even if the disaster destroyed the building and all computer equipment.

## Solutions Involving Outside Services

**H**AVING AN AGREEMENT WITH a local HP sales office in case of a disaster can be a low-cost way to attain backup service. Often a sales office will have an HP 3000 system used for display, customer benchmarking, demos and the sales office's own business needs. While it is possible that this machine can be placed in service when a customer has a disaster, that machine also may be in use or away at a trade show. This solution may be adequate for a small business with a single HP 3000 and few critical applications, but relying on help from the vendor leaves many factors to chance and works only as a stopgap measure.

Companies who work out an arrangement with the vendor must usually settle for whatever equipment happens to be available. They cannot specify a specific configuration, be assured that the equipment will be available or test the applications at the backup site. Such an arrangement makes it impossible to plan the logistics of preparing for disaster or

do a realistic rehearsal of procedures. A potential problem with vendor facilities for companies who have not migrated to Precision Architecture is that in the next few years, fewer and fewer sales offices will have the "classic" HP 3000s available for emergency customer backups.

Contracting with a service bureau that uses compatible hardware is a way to assure that critical processing needs like payroll are protected. A company can fulfill immediate processing needs for stand-alone applications through a service bureau. The solution is a limited one, however. A company using a service bureau can get a critical application run, but there may be no administrative support and little or no telecommunications to aid other aspects of recovery. If the disaster affects an entire local area or region, the service bureau may not be able to offer timely help to all the businesses wanting to use its services.

## Hot Sites

**T**HE TERM "Disaster Recovery Service" usually refers to businesses who provide hot sites for corporate customers who contract with them on a yearly basis. A hot site is a computer room that contains the systems, networking and peripherals necessary to offer a backup data processing department. Since the early '80s there have been businesses offering disaster recovery services for HP 3000 systems. Disaster recovery vendors offer either stationary or mobile hot sites. Both types of sites offer the customer the advantage of a trained staff experienced in dealing with disaster recovery. In the HP market, all service vendors offer some hands-on applications testing and rehearsal to help companies prepare for unexpected occurrences.

Stationary hot sites for Hewlett-Packard systems are available from four vendors (See article on page 42 for a survey of the hot site offerings.) The advantages of a stationary site include sufficient room for unique equipment to be installed at the customer's expense, and most stationary sites have a room with terminals that can be used for routine training. When there is a disaster, there is room for the customer's staff to work at the alternate site. Disadvantages include the slightly higher cost of the stationary unit and the additional expense and dislocation of having to have key employees travel to the recovery site just after a catastrophe.

The other approach that is offered by two disaster recovery vendors is to provide air-conditioned 30- to 40-foot "boxes" that are delivered by truck to customer sites. One advantage is that existing communication links can be utilized. Having the computer room brought to the site also eliminates the need to transport data and printouts back and forth between the remote site and company headquarters. The main disadvantage of mobile sites concerns their small size. It is difficult (and uncomfortable during the cooler months) for staff



members to work in the confined space of the portable unit. However, the size is less of a factor when the mobile unit can be wired into an alternative office location. An advantage of the small space is that these cramped quarters will encourage the company to restore and rebuild as quickly as possible.

## Empty Shell

**A**N EMPTY SHELL IS a minimal disaster recovery option for companies that can afford a time lag before processing can resume. The term refers to a fully constructed computer facility that has no hardware but does have the power, air conditioning and sometimes even the data communications to support hardware when it is delivered. In the event of a disaster, the customer negotiates with vendors for delivery of hardware, software and peripherals. This option may be less expensive than a hot site because the customer is paying for use of just a facility rather than an entire system. Customers can use such a site for long-term backup while their own facilities are rebuilt. The disadvantage of an empty shell is that applications cannot be tested on the hardware where they ultimately will be installed during the recovery period.

Regardless of what option you choose, the process of

planning and evaluating your company's recovery needs has payoffs of its own. A company that has formed a disaster recovery team to study the options is better able to respond to downtime caused by minor crises, accidents and errors. It doesn't take a five-alarm fire or flood to realize the benefits of careful planning and rehearsals. Companies that have examined their emergency procedures for hardware and software backup may find new ways to become more productive in everyday operations.

James Depp cites the example of a how a company in the process of planning a backup system studied the option of running on a processor with reduced disc capacity and fewer ports. During the disaster planning they found that they were able to save money and energy by reducing their regular data storage capacity.

A disaster recovery plan is more than an insurance policy, it's an evolving study of how a company uses its equipment, facility, applications and procedures. Although disaster preparedness cannot prevent most disasters, it can minimize the devastation of unavoidable ones.

Would you like to continue to see articles on this topic?  
Circle on reader card  
yes 330 no 329

# MEGAMEMORIES™

**When you think  
of memory,  
think of**



## WE GIVE YOU MORE—

- ★ **Savings up to 60%! No one else even comes close.**
- ★ **Memory— $\frac{1}{2}$  to 16 Meg!**
- ★ **Supported Models—12 different HP 9000 Series 200/300 computers.**
- ★ **Service—2 year warranty and 90 day money-back guarantee.**

### NEW! Upgrade Your Series 350 to a full 16 Megs!

MARTINSOUND TECHNOLOGIES has developed an affordable method of expanding the new HP Series 350 computer from 8 Mb to a full 16 Mb of on-line RAM memory. This expansion maintains the quality standards you expect of your HP 350 and achieves the full performance that MARTINSOUND MEGAMEMORIES products are known for, worldwide.

See your local MARTINSOUND TECHNOLOGIES dealer, or

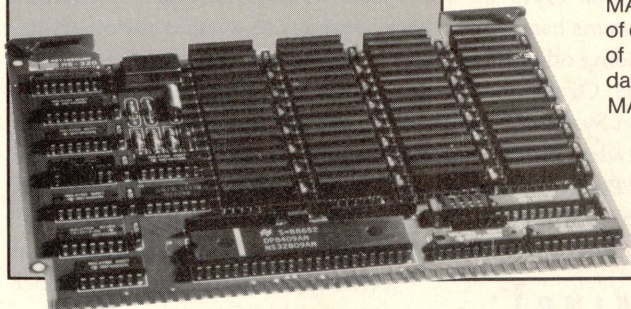
**CALL US TODAY 818-281-3555**



*"American Built Quality and Service Since 1971"*

Martinsound Technologies

1151 West Valley Boulevard, Alhambra, CA 91803-2493 FAX: 818-284-3092





# Hot Site Services

## Six Companies That Can Bail You Out When Disaster Strikes

**E**arthquakes in California, flooding in the Midwest, a fire in a skyscraper in Lower Manhattan, these are the kind of disasters that spur businesses to think hard about disaster recovery plans. However, it usually takes a visit from a financial or data processing auditor to move a company into devising a contingency plan for disasters.

According to Gerald Heath at Computer Solutions, when auditors typically make their fourth-quarter visit, that's the time when many customers actually sign contracts for hot site services. A hot site is a backup facility equipped with complete computer and communications systems, power and air conditioning. "The auditors are our best salespeople," says Heath. Taffy Rau at UP TIME agrees, "Five years ago the auditors would ask companies if they had a contingency plan for disasters. Now they ask if they have tested a contingency plan. Their questions have led some customers to contract for hot site recovery services."

*HP Professional* surveyed available hot site recovery services for HP 3000 systems. We've found six companies, including Hewlett-Packard, who provide disaster recovery services. Here is a list of the companies providing disaster recovery for HP systems, including the number of subscribers they serve as of February 1989:

**Computer Disaster Recovery (CDR)** of Birmingham, England began offering relocatable "boxes" equipped with HP systems in January 1982. Currently they have six mobile units and a location in Liege, Belgium to serve continental Europe. CDR began operation with HP equipment only, but now provides backup facilities for customers with Data General, Prime, ICL, Honeywell

Bull, DEC and IBM equipment as well. CDR has about 400 subscribers including about 200 who have HP systems.

**UP TIME** of Sacramento, CA began offering mobile HP 3000 hot sites in February 1984. Customers can have the mobile unit brought to them or use it at UP TIME's site. There is also an East Coast unit kept on a truck in Pennsylvania. Between the two coasts, UP TIME has 40 subscribers.

**Hewlett-Packard** entered the U.S. disaster recovery market in July 1988 when it announced HP Backup in a subcontracting agreement with Weyerhaeuser Information Services at their site near Tacoma, WA. The Weyerhaeuser site, originally constructed as a division of Weyerhaeuser Company, used to provide multivendor backup services for one division of the company. In 1984 when Weyerhaeuser split its operations into separate commercial companies, the newly created Weyerhaeuser Information Systems reconfigured the facility for use as a commercial backup site. Current customers wanting backup for HP machines contract with HP, but they can contract directly with Weyerhaeuser Information Systems for hot sites for their Honeywell, DEC (both VAX and PDP) and various types of IBM systems. Weyerhaeuser Information Systems has offered these contracts to outside customers including other Weyerhaeuser commercial companies since early 1985. Of the over 50 clients who use Weyerhaeuser Information Systems as a stationary hot site, 14 have a contract with Hewlett-Packard for HP Backup services.

**OFF-SITE** of Batavia, NY began operating a stationary hot site in June 1988. There are currently five subscribers.

**National DataGuard Technologies** of Cleveland, OH began offering its hot site in September 1988 and has four subscribers.

[BY PEGGY KING]



# OMNIVIEW...

## A Lotus window to your HP.

Put Lotus 1-2-3,™ a PC, and a financial analyst or user together with your latest corporate data and there is no end to the valuable reports, comparisons and analyses that can be generated to aid in decision-making. But while increasing numbers of companies are using PCs, importing the data from a mainframe system has remained a cumbersome process.

### Introducing OMNIVIEW.

With OMNIVIEW, users can access corporate data instantly from **within Lotus 1-2-3**. With one simple Lotus function (for example, @ODXSUM), you can instantly select the records of interest, sum them on the HP, and import the total directly into the designated spreadsheet cell. Revising reports with updated mainframe data is a simple recalculation instruction.

Because OMNIVIEW is a Lotus Add-in, users design spreadsheets using familiar Lotus syntax. And because OMNIVIEW uses OMNIDEX, records can be selected instantly, regardless of the database size. Summary financial reports and sales forecasts can now be prepared in seconds, giving your users the ability to manipulate on-line data with the full power of the PC.

Lotus 1-2-3 and OMNIVIEW. The "definitive" financial report writer for the HP.

## DISC

**Dynamic Information Systems Corp.**

910 Fifteenth Street, Suite 640  
Denver, Colorado 80202  
(303) 893-0335

CIRCLE 112 ON READER CARD

In Canada call:  
1-800-267-9377  
In Europe call:  
(44)-372-386838  
In Australia call:  
(02) 484-3979

\*Lotus 1-2-3 is a registered trademark of Lotus Development Corporation.  
© 1989





**Computer Solutions** of Orange, NJ has offered backup capabilities to vertical market customers at school districts and pharmacies for the past 10 years. In November 1988 they began making contracts for their stationary hot site backup facilities available to the general public. There are 16 subscribers.

### Facilities Devoted To Disaster Recovery

**CDR** — Six air-conditioned truck bodies of approximately 160 square feet.

**UP TIME** — Two 224-square-foot air-conditioned truck bodies and the 336-square-foot computer room at its office in Sacramento also is available.

**HP Backup** — HP subcontracts the HP-related portions of recovery services provided at Weyerhaeuser Information Systems' 12,000-square-foot facility for multivendor disaster recovery services. The HP systems are housed in a portion of a large computer room.

**OFF-SITE** — A 384-square-foot room for the computer and disc drives and a 480-square-foot room for the other peripherals.

**National DataGuard Technologies** — A 2,000-square-foot computer room.

**Computer Solutions** — A 1,200-square-foot computer room which also houses its corporate system.

### Types Of HP Computer Equipment Available (As Of February 1989)

**CDR** — Series 950 (a second system is expected to be in service at the Liege site by mid-1989), three Series 70s, a Series 58 and a Series 52, four Series 42s and, three Series 48s, a Series 30 and a Series III.

**UP TIME** — Two 70s and two 48s, one for each coast's mobile unit and a Series 42 in the company's computer room. A Series 950 is on order and should be available by mid-1989.

**HP Backup** — A Series 70 and a Series 58 with plans to add a Series 950 by mid year.

**OFF-SITE** — A Series 68

**National DataGuard Systems** — A Series 950

**Computer Solutions** — Two Series 70s (one of these is crated and ready to ship for customers choosing the Freight Ready Option), a Series 58 and a Series 48. In addition, there are HP Micro 3000s that can be packed with 9144 cartridge tape drives and shipped to sites needing a smaller machine for backup.

### Office Facilities, Printers And Terminals

**CDR** — Up to 30 terminals can be sent out from England and 10 from the continent, but very few customers ask for terminals to be included. The new Liege office has up to 25,000 square feet of space that can be used as office accommodations.

Security and System Management  
Security and System Management  
Security and System Management  
Security and System Management  
Security and System Management  
Security and System Management  
**Security and System Management**  
**Security and System Management**

Bring Security and System Management out of the SHADOWS with ...



**SECURITY PLUS.....**  
*It will grow with your system!*



**CALL FOR A SELF-PACE DEMONSTRATION NOW!**

**UNIFIED SOFTWARE SYSTEMS**  
6551 Loisdale Court, Suite 400  
Springfield, VA 22150-1854  
(703) 922-9800

**USS MARKETING, INC.**  
5666 La Jolla Blvd., Suite 8  
La Jolla, CA 92037  
(619) 454-8441

CIRCLE 139 ON READER CARD



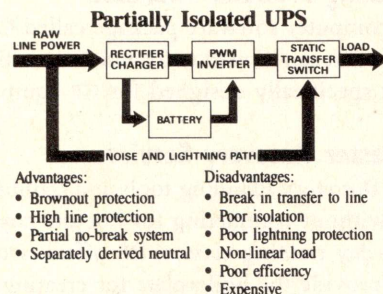
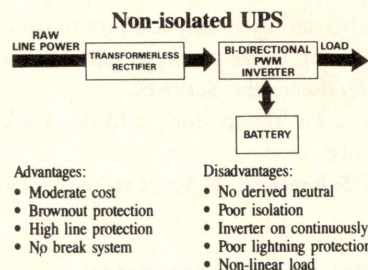
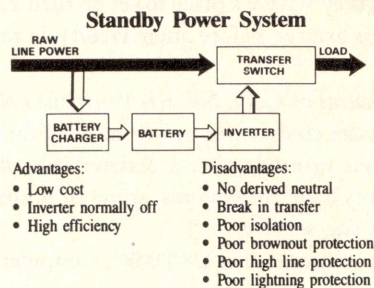
# How to Protect Your HP® Computer And Make It Last Longer

World's largest manufacturer of uninterruptible power systems for Minis, Micros, and LANs tells how

**Y**our HP computer is bombarded daily by spikes, sags, surges, noise, and blackouts. Bad power eats away at fragile electronic circuits, increases service costs, damages disks and causes down time.

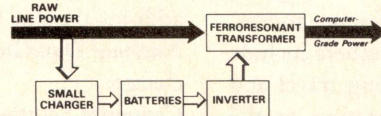
You can eliminate these problems by investing in an Uninterruptible Power System (UPS). Your investment in a UPS will mean reduced down time, increased equipment life, and lower service costs. Typically, a UPS will pay for itself in less than one year, but not all UPS are created equal. Many are off-line, standby systems. Most won't even provide isolation from the power line or a separately derived neutral.

Shown below are three traditional UPS configurations. Each has its advantages and disadvantages.



Best Power Technology's new Uninterruptible Power System called FERRUPS® is a breakthrough in computer power protection. FERRUPS represents a major advance over the three traditional types of UPS technology.

## Advanced Technology FERRUPS (Provides True Isolation)



FERRUPS uses a ferroresonant transformer which is on-line continuously to provide outstanding isolation and eliminate spikes, sags, noise and brownouts. If power fails, the inverter takes over. Because of the flywheel effect of the ferro transformer, there is absolutely no break in output power. FERRUPS provides continuous on-line computer-grade uninterruptible power.

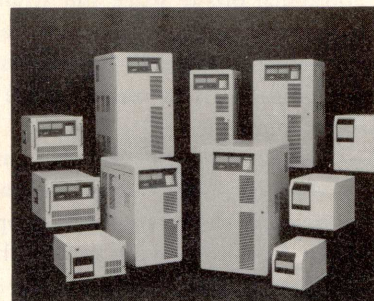
## FERRUPS Provides Better Protection Than Any Other Design

- Inverter normally off
- High efficiency
- Filters non-linear loads
- High line protection
- Low cost
- Separately derived neutral
- High isolation
- No-break transfer
- Brownout protection
- Lightning protection

## Advanced Interactive Communication Package Standard on Every Model

Most UPS only provide basic relay contacts for alarm and loss of line. FERRUPS

gives you even more. Every FERRUPS includes an RS232 port for full duplex TTL communication. You can control FERRUPS from your computer console or from thousands of miles away. FERRUPS has an on-board micro-processor, which keeps track of everything. It even records the time and duration of power outages. FERRUPS can even initiate a controlled shutdown for unattended operation. FERRUPS is the smartest, most communicative UPS in the world today!



350 VA to 15 KVA uninterruptible power systems for Minis, Micros, LANs and anything else that needs clean, continuous power. BEST UPS are plug compatible with all HP computers within its power range.

## Advanced Meters and Alarms Standard on Every Model

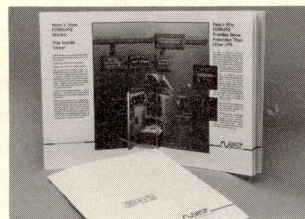
**Meter Functions:** AC Volts Out, AC Volts In, Battery Voltage, AC Current Out, VA Load, DC Current In, Frequency, Heat Sink Temperature, Ambient Temperature, Time/Date, Number Power Outages, Log of Power Outages, Projected Run Time Available, System Hours, Inverter Hours, Number of Overloads, Full Load %, Log of Alarm Conditions.

**Alarm Messages:** Low Battery, Near Low Battery, High Battery or DC Bad, Low Run Time Left, Low AC Out, High AC Out, Output Overload, Ambient Over Temp, Heat Sink Over Temp.

Interested? Call or send for our  
NEW, FREE LITERATURE today!

**BEST**

Best Power Technology, Inc.  
P.O. Box 280 - Necedah, Wisconsin 54646  
**1-800-356-5794, ext. 3412**  
In Wisconsin (608) 565-7200, ext. 3412  
Please print legibly.



Name \_\_\_\_\_ Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Equipment to be protected \_\_\_\_\_

Phone ( ) \_\_\_\_\_

CHECK ONE: User ☐ Dealer ☐ Specifier ☐ OEM ☐

©1989 Best Power Technology, Inc.  
1-800-356-5794, ext. 3412



**UP TIME** — Up to 12 terminals can be included when the mobile truck bodies are sent out. There can also be up to three printers including a 35 page per minute HP 2680 laser or a high-speed HP line printer. Customers who set up their backup operations at UP TIME's office can use three vacant offices and a full selection of office equipment including fax and copier. When multiple clients are involved in a disaster, UP TIME is prepared to heat and furnish part of its 5,000-square-foot warehouse.

**HP Backup** — There are three separate work areas with a total of 900-square-feet of space, up to 20 terminals and two line printers.

Since HP's backup service is designed for Fortune 100 companies, the Weyerhaeuser Information Systems Facility also provides comprehensive business services. There is a print shop, bulk mail facility, corporate message center, word processing service, fax and telex machines and conference rooms.

Services provided by HP Backup staff members include procuring additional offsite space and arranging travel and lodging for the employees temporarily relocating to the Tacoma area. Weyerhaeuser Information Systems' corporate fitness center and cafeteria are also available to clients using the recovery facilities.

**OFF-SITE** — There is a 986-square-foot training facility that can seat up to 40 people, 22 HP 2622 terminals and a 385-square-foot meeting room with seating for 14 people and includes presentation aids. Fax and copying are available from another business in the same building. There is an HP 2680 laser printer and an HP 2608 printer available with the backup system.

**National DataGuard Technologies** — There is 1,500-square-feet of office space, 10 HP 700 terminals and a 600 lpm line printer. The site also provides a "Ready Center" office equipped with conference room, private offices and a lunchroom.

**Computer Solutions** — 300 square feet of office space, with all terminals and choice of high speed line printers. Fax and copier available.

### Communications Equipment

**CDR** — There is a one kilometer range of communications with optional laser links between the mobile unit and the customer's building. This unique system works with two laser cameras (one on either end) and can be used to support up to 50 users.

**UP TIME** — Communications configurations can use up to 12 dial-in lines, 1,000 feet of fiberoptics and an eight port multiplexer for local terminals.

**HP Backup** — A very extensive assortment of multivendor telecommunications equipment is housed in an area adjacent to the systems, and a variety of networks can be installed with over 100 circuits.

**OFF-SITE** — Series 68 system is configured with 12 modem ports and 24 ATP ports.

**National DataGuard Technologies** — There are modems and

multiplexers to support up to 72 ports. There is an X.25 PAD so that remote terminals can run on an X.25 network. Wide area networking with IBM machines also is available.

**Computer Solutions** — Multiplexers, dial-up modems, stationary modems and 20 dial-up lines available.

### Amount Of Rehearsal And Testing Time Included In The Contract

**CDR** — One full test a year (one or two days of testing). For an additional charge, CDR will test up to four times a year and provide testing at the customer's site.

**UP TIME** — Two days of testing at mobile sites and three days when the customer comes to their site. UP TIME recommends that the first test take place at their location.

**OFF SITE** — Eight hours at no additional charge.

**HP Backup** — 48 hours (six working days) per year plus an additional eight hours the first year.

**National DataGuard Technologies** — 32 hours at no additional charge.

**Computer Solutions** — One test per subscriber, per year.

**S**OME COMPANIES ENACT a disaster recovery plan that calls for a two step recovery process. Immediately after the disaster, they move their processing to a hot site. In addition, they contract with an empty shell (also known as a cold site) so that they'll have a place to set up their replacement equipment if it arrives before their facility is restored or rebuilt.

**Provident Recovery Systems** of Cary, NC has 11 mobile cold sites available. Customers can contract for one or more of these sites to be brought to their grounds after a disaster. About 30 of Provident's 100 clients have HP systems, some of whom also contract with a hot site service.

**UP TIME** — There is extra space in UP TIME's computer room for use as a cold site.

**HP Backup** — Hot site customers can contract to use the 500 square-feet cold site for up to six weeks as part of their contract with HP Disaster Recovery Services.

**OFF SITE** — There is a 450-square-foot cold site available to hot site customers only.

**National DataGuard Technologies** — Vault storage service are available.

### Planning Products Available

**CDR** sells a microcomputer software package called C Plan. It's a set of templates that can be used to formulate a contingency plan that is not specifically designed for HP equipment.

### Disaster Recovery Services

**HP** offers Disaster Recovery Planning tools and training that can be purchased without contracting for hot site coverage. Along with a two-day training classes, HP offers two software templates to provide the boilerplate for creating plan-



UP TIME  
643 W. Stadium Lane  
Sacramento, CA 95834  
CIRCLE 356 ON READER CARD

Computer Solutions  
397 Park Avenue  
Orange, NJ 07050  
CIRCLE 355 ON READER CARD

OFF-SITE  
32 Ellicott St.  
Batavia, NY 14020  
CIRCLE 354 ON READER CARD

Provident Recovery Systems  
110 MacKenan Dr.  
Cary, NC 27511  
CIRCLE 353 ON READER CARD

National DataGuard Technologies  
4111 East Royalton Rd.  
Cleveland, OH 44147  
CIRCLE 352 ON READER CARD

Computer Disaster Recovery  
1 Norley Trading Centre Valepits Rd.  
Garrets Green Birmingham, U.K. B33 0TD  
CIRCLE 351 ON READER CARD

ning documents. One is used with either an HP 3000 or PC-based word processor to write the recovery plans. The second template works with project management software to specify the tasks involved with writing a disaster recovery plan. It's specially designed for the HP 3000 environment.

**OFF-SITE** offers an information processing audit for helping customers develop contingency plans. Planning analysts conduct interviews with key personnel at the customer's site.

**National DataGuard Technologies** sells a PC-based planning methodology and has planning consultants on staff.

**Computer Solutions** markets DP-AID, a software package that

allows companies to do an impact/risk analysis and then to prepare a comprehensive disaster recovery plan. Consulting services are also available.

This survey shows that there is no standard plan, facility or service for disaster recovery. Each service vendor has a unique offering; no two of the services are even equivalent, much less similar. Therefore, a comparison of contract prices would be meaningless. Hot site contracts are expensive, and many smaller companies neither need nor can afford this level of coverage.

For most smaller companies, a contingency plan (and a test of how well it works) is the most important protection against a extensive losses after a disaster. Less than a month before a fire destroyed seven stories of First Interstate Bank in Los Angeles, the bank conducted a practice drill of its disaster recovery plan. Quick thinking on the part of employees did more to save the business during the first few hours after the fire was detected than the backup efforts that began after that. Knowing how to respond helped the bank minimize losses from interrupted business. The main benefits of disaster recovery planning require more expenditure of time and effort than of cash.

Would you like to continue to see articles on this topic?  
Circle on reader card  
yes 342 no 341

## The first step towards good security is CDS/SecReview



CDS/SecReview is rapidly becoming  
"The Standard" for evaluation of  
MPE system security.

- What accounts and users are not assigned passwords?
- What accounts, users, programs have been granted special capabilities?
- What accounts, groups and files have system wide WRITE, READ, APPEND or EXECUTE access?
- How old are MPE passwords?

Answers to the above questions, plus many others are provided by CDS/SecReview. Priced at \$875.00, including documentation and one year free maintenance.

**CHESTNUT**  
DATA SYSTEMS

Park Towne Place Suite S05  
2200 Benjamin Franklin Pkwy.  
Philadelphia, PA 19130  
215-557-6607



CIRCLE 188 ON READER CARD

## DIRTY TAPES?

REDUCE JOB ABORTS  
INCREASE TAPE LIFE  
ELIMINATES CINCHING  
NATIONWIDE SERVICE



## MAGNETIC TAPE CLEANER/REWINDER PERIPHERALS

A High Technology Company

1363 Logan Ave.  
Costa Mesa, CA 92626  
Headquarters 714-540-4925  
Outside CA. 1-800-468-6888  
FAX 714-540-2026

CIRCLE 131 ON READER CARD



# Disaster Recovery

## Resurrecting Erased HP Files

**T**he simplest error always seems to beget the most complicated problem. One of the worst is erasing data and/or programs. Whether by accident or mistake, we're all probably doomed to dump the wrong file someday. Pointing at icons with a mouse is just as effective as doing a PURGE "MYFILES";0. Regardless of your route, it's about as humbling an experience as you can get for the money.

The depth of your folly turns out to be quite a variable thing. If you blow away a program and have a backup copy, you have a minor inconvenience on your hands. Erasing a day's work or more can bring on a real sweat. Little compares to wiping out a whole disc full of text, program code or research data. That's when the perspiration turns to ice. At various times in my career, I've rescued discs both soft and hard from a variety of misadventure, and had a lot of fun in the process. The bulk of the success stories have been with HP LIF proprietary formats, and while it has been profitable, I think it's time to show how it's done.

**I**F YOU HAPPEN to have an HP-UX-based operating system, erased files might as well have never lived. HP's cooperative minions have seen fit to conceal every shred of information that might shed light on the inner workings of its version of the UNIX operating system. Starting with the fact that HP-UX doesn't include the concept of centralized directories and extending through a bi-level linked allocation scheme, I'm amazed that it works even when it isn't corrupted. This approach is good for password security and terrific for maintaining HP's hold-over operating system disc extensions, but it renders recovery a lost cause.

MS-DOS systems are much closer

to earth. While fragmentation of the allocation table is likely, if not downright inevitable on a heavily used disc, you do have a few things going for you. First, there's a unified directory, and the names of erased files are present except for the first letter of each name. In earlier releases of DOS, you even get the number of the first cluster that the dead file occupied. This can be of service on slightly fragmented discs.

If you build a list of starting clusters and assume sequential allocation, ending with the next file's base, a workable picture can emerge. While not trivial, salvation can be the reward of persistence. Reasonably automatic recovery isn't possible unless you happen to be running Peter Norton's directory saver utility as part of your system's daily startup.

I've kept the best for last. HP's proprietary disc organization, while showing its age, has some features that make "unerasing" surprisingly simple, once you know the trick. A discussion of LIF DOS organization reads a lot like the children's story, "Good News/Bad News."

The good news is that when you erase a file, all but a tiny amount of information is still there, exactly as it was when you were last in the file. This is an excellent basis for automatic resurrection. The bad news is that the missing part is the file's "type." The two most critical missing bytes tell the operating system what kind of information is in the file; that is, if the file contains DATA, BDAT a binary, a program or some application-dependent mess. PURGE throws that datum away. Because LIF discs are broken up into consecutive blocks, the size of erased files must be stored to prevent space from becoming "orphaned" or permanently unclaimed through repeated erasure and reuse.

You now know why "NULL" files don't shrink when you store a fresh,

**[BY DON PERSON]**



though smaller, file in the "hole." That's part of the bad news. Creating and then erasing many small files on a disc makes it difficult to shrink out the space left behind.

The infamous PACK operation cleans up through the hazardous and time-consuming expedient of physically relocating files. Just hope the power doesn't dip while you're in the middle of packing reshuffle. The result? A dead disc.

More good news: Files are never fragmented. The bad news: Unless a file is the last one in the directory, you can't enlarge it dynamically, or return unused space for that matter. This forces people to err on the side of excess caution by creating entries big enough for a worst-case specification. This leads to terrible underutilization, especially when coupled with HP's traditional ultra-conservative track-sparing and low-bit density.

The good news that stands by itself is that for all the clumsiness and inefficiency that we bear in the legacy of LIF, almost any file that has been erased and not overwritten can be reclaimed 100 percent intact. Best of all, it can be done almost automatically. Try that with erased HFS or SDF files!

The last bit of good news is that all HP computers I know of have some mechanism for reading and writing LIF files, even if handled by a specific translation program. The bad news? If you try to step outside the HP line, nobody knows LIF from laugh.

Tying it together on your system requires only one specialized programming resource: a physical record disc utility. Fortunately, these are available for all major HP systems. (Yes, even the MS-DOS systems.) The PHYREC binary is reasonably well known to Series 200 and 300 owners. Last year, I rewrote and updated PHYREC 80 for the Series 80. Owing to the compliant nature of LIF, files from almost any other system can be recovered on any other, provided you know the "divisional offset" integer codes used to differentiate files originating on computers manufactured by HP's various divisions.

HP chose to pack quite a bit of information into the two file-type bytes. The second byte is the low integer part of the type. This is a bit-mapped quantity conveying the attributes describing the organization of the file (see Table 1).

The high order part of the definition is a negative number from which the low-order part of the type is subtracted. This results in a file-type signed integer between 0 and -32768. Zero, of course, is reserved for null (erased) files.

It has become pretty much a standard to place this value as a signed integer in the first two bytes of the root sector on each disc, so if in doubt, read it before recovering a disc. Don't count on it, of course, because it's only an HP standard. That means that each division does its best to change, ignore or supersede it the day after it's promulgated, most often as a way of reasserting autonomy. Dissect enough discs and you'll see what I mean.

The high-order part can be used to identify the

originating division as shown in Table 2.

HP's LIF documents claim that only the following characters can be used to make legal file and volume names:

- Letters A-Z both upper- and lowercase.
- Integers 0-9
- The underscore character

So much for good intentions. Expect to find any and all characters in the names of real discs. Don't be surprised to find one system's filename delimiter as a legal character elsewhere.

TABLE

Here is the formula for decoding the low order part of the type:

BIT#	Attribute
0	Hide Directory Name During CATalog Indicates LIF ASCII if all other bits are zero.
1	Soft Write Protect. Indicates LIF BINARY file if all other bits are zero.
2	Extended File Type. If true, the type is indicated by a combination of the remaining high-five bits of this byte.
3	Binary or Object Code. Indicates a program of this type in many systems.
4	DATA
5	Program File
6	Null or part of extended type
7	Next Free File Block " " " " "

TABLE

2

RANGE	Act-ID	Division
+2 to +32767		Reserved by HP
-3 to -1024		Used for interchange
-1025 to -2048		GSD System 300
-2049 to -3072		CSY System 3000
-3073 to -4096		DSD System 1000
-4097 to -5120		GSD System 250
-5121 to -6144		DCD 98xx
-6145 to -7168		DTD
-7169 to -8192		CVD Series 80
-8193 to -9216		CSD
-9217 to -32767		Free as of 1981



The Series 80 volume delimiter, the period, is the extension delimiter in HP PASCAL, for instance. People at the divisions have stretched and changed the standard in a variety of ways, but most of the abuse has been limited to the name and byte count fields.

## Automatic Recovery

**N**OW THAT YOU HAVE an idea of how to recreate a trashed file's type field, all that's left is to grasp automatic recovery. When files are purged in a group, while the extent may be gone, the base sector is still in its proper place. Simply reading the directory entries and subtracting one base from the preceding value accurately reconstructs the file's original size. If you know the offset, all you need to prompt for is the low order information. Once installed, you physically rewrite the disc sector containing the entities in question.

There would have to be one special case, or it wouldn't be HP that we're talking about. The last erased file has no succeeding entry; hence, there's no base to index for the true length of the file. There is a solution: I wrote a quick fix for this in Series 80 assembly language called SHRINK. You can do the same thing at high level with RSECTOR. Here's what you need to do:

1. Read the last sector of the disc. If the content is uniform, remember the initialization pattern found here.

2. Starting with the base sector of the last file, conduct a binary search to find the highest sector not equal to the format-initialized sector read in step one.

3. Subtract the sector number found in step two from the base and install this value as the extent of the file.

Now even the last file is as good as new.

*Program 1* a short example written for the Series 80. The code has been written so that only minor modification needs to be done in order to run under any of the other HP BASICS you may have.

While I've painted a dim picture of HP-UX recovery, several commercial programs to clean up killed files after the fact exist for HP's MS-DOS computers. The best known are Norton and Paul Mace Utility packages. Each offers before and after file recovery and is available nationwide. —Don Person is an independent consultant based in Albany, NY.

Would you like to continue to see articles on this topic?  
Circle on reader card  
yes 348 no 347

**A**

UNPURGE.DOC

## Program .

```

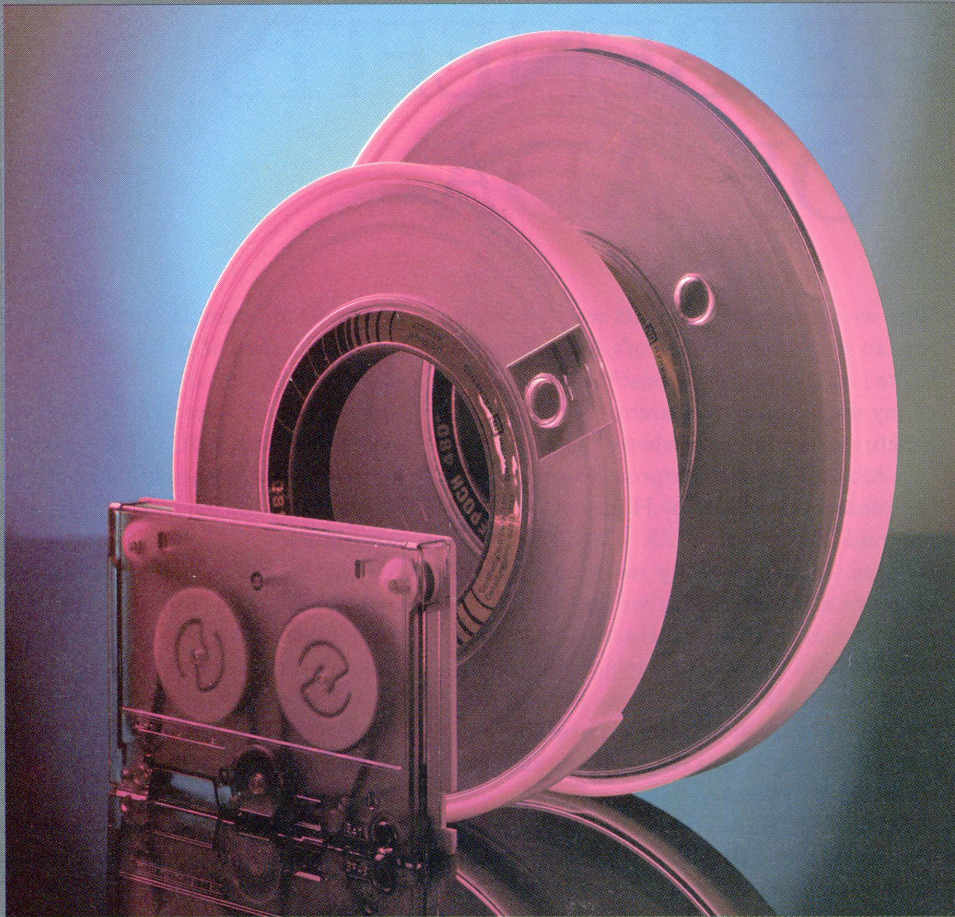
1000 ! do a smart UNPURGE with feedback from OPERATOR dep
1100 ! *****
1200 ! * BEGIN RECOVERY FROM A PURGE "xxx", 0 to a purge and pack of the end
1300 ! * this program searches out all files at end and restores their length
1400 ! * you must restore their type.
1500 ! *****
1510 DEF FNINUM2(X$) = 256*NUM(X$)+NUM(X$[2]) ! convert string -> integer
1520 DEF FNICH2S(X) = CHR$(X DIV 256)&CHR$(RMD(X,256)) ! int->string
1600 ON ERROR GOTO SKIP_ERROR ! insure that binary program is loaded
1700 LOADBIN "PHYREC80"
1800 SKIP_ERROR: OFF ERROR
1900 EOF$=RPTS(CHR$(0),10)&CHR$(255)&CHR$(255) ! set reference data
2000 MK$=EOF$[11,12]
2100 DIM A$[256],B$[16384] ! WORKING BUFFER for up to 64 sec directory
2200 CLEAR
2300 FIX=0
2400 GET_ADDR: DISP "What disk drive has the disk to unpurge "
2500 INPUT MS$ 2600 DX=DISKSIZE(MS$) ! get highest sector number from PHYREC
2700 ! *****
2800 ! * FIRST GO GET THE HEADER -EOF$ marks the real end *
2900 ! *****
3000 RSECTOR A$,0,MS$ ! get the base of volume
3100 DIR1=NUM(A$[12]) ! first sector that directory is in
3200 ! NOW READ THE DIRECTORY UP TO 64 SECTORS
3300 DS=MIN(NUM(A$[20])*256,16384) ! total directory size or $ max

3400 RSECTOR B$[1,DS],DIR1,MS$
3500 FOR J=1 TO DS STEP 32 ! now loop through till EOF$ is found
3600 DISP B$[J,J+9] ! SHOW THE NAME OF THE FILE
3700 IF B$[J,J+11]=EOF$ THEN WRITIT ! end of directory mark found
3800 IF B$[J+10,J+11]=EOF$[1,2] THEN GOSUB FIXIT ! null file found
3900 IF B$[J+10,J+11]=MK$ THEN GOSUB FIXIT ELSE FIX=0 ! false purge EOF
4000 NEXT J
4100 WRITIT: WSECTOR B$[1,DS],DIR1,MS$ ! re write the directory block
4200 DISP " ALL DONE WITH THE DISK"
4300 BEEP
4400 END
4500 ! this routine checks the entry to find the missing information
4600 FIXIT: MYBASE=FNINUM2(B$[J+14,J+15]) ! extract the base sector
4700 FIX=1 ! flag as changed
4800 NEXTBASE=MIN(DX, FNINUM2(B$[J+46,J+47])) ! index to next entry
4900 IF NEXTBASE=0 OR NEXTBASE=DX OR SGN(NEXTBASE)=-1 THEN NEXTBASE=DX
5000 B$[J+18,J+19]=FNICH2S(NEXTBASE-MYBASE) ! install new extent in dir
5100 DISP "file length is "&VAL$(NEXTBASE-MYBASE)
5200 DISP "file is 'B'inary 'G'raph 'D'ata 'A'ssm 'P'rog 'F'orm 'K'ey?"
5300 INPUT DS
5400 DS=TRIM$(UPC$(DS[1,1])) ! guard against error
5500 X$=CHR$(POS("BGDA-KP-----F",DS)*4) ! make the file type
5600 IF X$=CHR$(0) THEN X$=X&CHR$(0) ELSE X$=CHR$(224)&X$ ! CVDoffs
5700 B$[J+10,J+11]=X$ ! Set the file type integer string into the entry
5800 RETURN

```



# BackPack solves backup problems of all shapes and sizes.



**W**hatever your HP 3000 configuration, there's a BackPack™ solution for you! For cartridge tape backup, there's low-cost **Micro BackPack**. Micro BackPack cuts backup time in half and doubles cartridge capacity—useful on any cartridge-based HP 3000, and a real lifesaver on a Micro LX or GX.

For MPE/V systems with reel-to-reel tape drives, the solution is **BackPack/V**. BackPack/V dramatically reduces backup time and tape usage, stores multiple databases on a single tapeset, offers integrated SYSDUMP and VALIDATE, and supports unattended backup.

For new MPE/XL sites, **BackPack/XL** is here! Because it uses the same tape format as BackPack/V, BackPack/XL can play a key role in migration and disaster recovery.

BackPack/XL is over twice as fast as HP's TRANSPORT mode, about 20% faster than native mode, and also supports operatorless backup.

BackPack can solve *your* backup problem. Call to order a free demo today!



Tymlabs Corporation • 811 Barton Springs Road • Austin, Texas 78704 U.S.A. • (512) 478-0611 • Telex 755820  
Wick Hill Associates Ltd. • 42A-44 High Street • Egham, Surrey, U.K. TW20 9DP • 0784-38441 • Telex 268764  
Tymlabs-APPIC • 123 Rue de Petit-Vaux • 91360 Epinay sur Orge, France • (1) 64-54-87-37 • Telex 603409  
Megatec Pty., Ltd. • 2 Brunswick Road • Mitcham, Victoria 3132, Australia • (03) 874-3633 • Telex 152692  
Infosistemas Financieros S.A. de C.V. • Bahía de Guantánamo 79 • 11300 México, D.F. • 254-3274 254-3284

BackPack is a trademark of Tymlabs Corporation.

CIRCLE 140 ON READER CARD



# THE BENEFITS OF ADA

**It's Reliable,  
Efficient,  
Modifiable,  
Understandable  
And Portable**

Why would anyone in the MIS world want to read an article about Ada? Isn't Ada only used in the Department of Defense? How can it be of any use to the civilian sector? What are the benefits of using it anywhere?

Ada is a general-purpose programming environment developed by Honeywell-Bull in the mid-'70s for the U.S. Department of Defense. It's regarded by many as the first language to be designed according to modern principles of software engineering. Ada now is available in almost every major computing environment, but not in MPE. In addition, civilian software developers are beginning to take Ada seriously as a language for building commercial systems.

The principle benefits of the language are its emphasis on reliability, efficiency, modifiability, understandability and portability. The main disadvantage is the need for someone using it to think differently about the programming process. Ada is much more modular than traditional languages such as COBOL, FORTRAN or PASCAL. In addition, it is "extensible;" that is, we can extend the features of the language to represent real-world solutions.

Another benefit is its ability to create maintainable software. In fact, since many software industry analysts estimate that 80 percent of all software effort is devoted to maintenance, code written in Ada will return genuine economic benefits long after the original programmer has moved on to another assignment and the maintenance team has taken over.

There have been other computer languages of great promise in the past. In some cases, these languages have been too restricted in their scope of application. COBOL and

FORTRAN for example, each were designed for a particular class of problems. PL/1 was an excellent start toward a more generalized language, but it never received the level of support it deserved. PASCAL has become popular in some environments, but it's both elegant in its structures and inadequate in its application capabilities.

The current darling of the microcomputer community, C, is powerful, extensible and well-designed. It also is more suited to systems programming than applications development. It's not an easy language to learn. COBOL-85 is a good step in the right direction with its new emphasis on structured design.

But we have reached a point in the evolution of software development tools when we need to recognize the need for something akin to a "unified field theory." We need some set of principles (not methods) that will guide the process of creating new software and provide the foundation for consistent quality. Moreover, the principles should help us create tools to maintain that quality through all phases of the software lifecycle, from requirements definition through maintenance.

## **Discipline And Quality**

There is a new phrase in the computing community: *software engineering*. To many "old-timers" this is just another word for programming. To others, it represents an effort to bring some sense of discipline and quality to our profession.

To illustrate the idea of software engineering, we can use Thomas Edison as an example. Edison was a brilliant man who developed wonderful new inventions in the field of electricity. Was he an electrical engineer? Not by today's standards. His creativity transcended his training. And we need more people like



## **LANGUAGES**

**Richard Riehle**





# HARDWARE, SOFTWARE, EVERYWARE, BUT NO PROJECT ACCOUNTING INFORMATION ANYWARE!

Project Accounting. It's an essential yet complex task that requires up-to-date financial information on every project component — from labor to capital equipment to purchasing commitments. It requires cost information to be available in a timely and expedient manner, tailored to your business.

Smith, Dennis & Gaylord understands the frustrations of project accounting so we designed a cost management system called Project Control. It can be integrated with SD&G's full family of BUSINESS/XL products to form a comprehensive project accounting solution. It's powerful, it's flexible, and it's available today.

Project Control is making order out of chaos in major corporations throughout the country. Aerospace, government contracting, engineering, construction, entertainment, film production, research firms

and other project-oriented businesses have turned to Smith, Dennis & Gaylord to help them monitor and control their project costs. They showed us their most complicated requirements and we showed them how Project Control could turn their vision into reality. We can do the same for you.

Project Control runs on the powerful Hewlett-Packard 3000 line of computers with speed and memory capabilities that PC based systems can't touch. The software is modular so you only pay for the functions you need. It can be used with your existing financial system or our BUSINESS/XL financial software products: General Ledger, Accounts Payable, Accounts Receivable, Payroll, Fixed Assets, Purchasing and Billing.

If your hardware and software is no-ware — take control with **Project Control**, your **project accounting solution**. Call Smith, Dennis & Gaylord.



**SMITH,  
DENNIS &  
GAYLORD, INC.**



3211 Scott Boulevard  
Santa Clara, CA 95054-3078  
(408) 727-1870



him for that very creativity. But in the complex world of modern electronics, ordinary creativity isn't enough. So we have formal programs to grind out all sorts of engineers to build and maintain our technological extensions on Edison's original work.

Software has come to the same point as electrical engineering. We no longer can afford to rely on folklore and good luck to assure us that our systems will do what we want them to do.

Ada is an attempt by the software engineering community to create a software development environment based on sound principles of software engineering. A discussion of those principles is beyond the scope of this article. However, we can note that principles are not the same as methods. Because software engineering is an emerging discipline, new principles are certain to emerge with it.

### HP Ada

As of this writing, HP has not made a commitment to provide an MPE or MPE-XL version of Ada. However, there are MPE users within HP and customers of HP who want Ada. In fact, now that the Department of Defense has become more tight-fisted about granting waivers, it is probably appropriate for HP to elevate its commitment to an MPE version of Ada.

Hewlett-Packard has made a substantial commitment to Ada in its 9000/300 HP-UX. So far, there is no HP-supplied Ada compiler for any precision architecture operating system. However, an Ada-to-C cross-compiler is available for UNIX versions of the RISC machines from Irvine Compiler Corporation.

At present, the incentive is in HP-UX Ada systems (using Ada-300) because software contractors are winning substantial contracts using Ada on the HP 9000/300 Series. In fact, HP systems have been selected for several major development projects.

One of Ada's original charters was "embedded" systems; that is, executable

*Ada is an attempt by the software engineering community to create a software development environment based on sound principles of software engineering.*

programs that are compiled on one system and embedded into another. An example is missile telemetry. A source program can be compiled on an HP 9000/3xx, and the compiler produces object code that will execute in the "on-board" computer that controls the telemetry.

Embedded systems are found in many different environments, but are especially important to space and missile systems. HP has long been an important player in space, defense and avionics instrumentation and embedded systems. It's natural that this would be the domain of initial emphasis.

Why, if Ada is an embedded systems language, should we be interested in it for MPE environments?

MPE is the operating system of choice for MIS organizations using HP equipment. The ability to easily network multiple processors, the power of the IMAGE database management system, and the availability of development tools and packages for both manufacturing environments and accounting systems has been an important strength of the HP 3000 line of computers. In particular, MPE's ability to reliably manage on-line transaction processing (OLTP) systems has been an important selling point.

In addition to these advantages, HP's reputation for quality hardware at reasonable prices has been a real plus to many MIS managers.

The key word here is "reliable." Both Ada and HP stress reliability.

One of Ada's principle design goals was reliability. That goal has obvious virtue in our embedded systems, but it also might be considered appropriate to emphasize the same goal in our non-

embedded systems. As software engineers daily confront the issue of reliable software, Ada becomes an attractive option.

Another important design goal is maintainability. With estimates of 80 percent as the time spent maintaining software, most software management people would agree that a language that was easy to maintain would be valuable. Maintenance comes in several forms: preventive, predictive, corrective and enhancement.

These maintenance forms are regularly performed in any production software environment. Properly designed Ada systems greatly can reduce the cost of all forms of maintenance. In fact, many software professionals believe that Ada's real benefit will be in the cost savings associated with the maintenance process.

There are other important issues such as efficiency, documentation, quality assurance and ease of design and coding. All of these effectively are addressed in Ada. But the key issues in many MIS environments are:

■ *Does the software consistently do what it is supposed to do (reliability)?*

■ *Is it economical to maintain it?*

Under MPE, we have three basic options for software languages: SPL, PASCAL and COBOL (recently, COBOL-85)

Of course, there are other tools such as FORTRAN, RPG, PROLOS, COGNOS and a whole list of program generators. But we are discussing the procedural languages.

Under MPE-XL, we lose SPL when programming in Native Mode (NM). So we are left with PASCAL and COBOL.



Yes, the MPE-XL PASCAL is excellent. So is the COBOL-85 compiler. But neither of those languages takes us as far as Ada. In fact, Ada is derived from PASCAL and substantially improves upon it.

### At First Glance

When some programmers first see Ada, their eyes glaze over from the sense of seeing a software gothic. There are many aspects of the language that look familiar to experienced PASCAL or PL/1 programmers, but there are many things that seem peculiar. Ada requires that the programmer think about the programming process differently.

Imagine a time-traveling Euclid picking up a modern textbook on high-school algebra. He would be totally bewildered by it. The quadratic equation would look like meaningless scribbling. Poor Euclid didn't even have the number zero. He would have no context in which to deduce what the equations and expressions meant. Sometimes we have the same feeling when we are confronted with a new computer language. We need a context for it, and we need to alter our mode of thinking.

Ada requires this kind of intellectual adjustment.

The language is large, and anyone who tries to take it all in with one glance probably will suffer intellectual indigestion. The beauty of Ada is that you don't need to know all of it to use it productively.

It's much like your home computer. If there were no case surrounding the circuits, power supply, mother board and other components, you easily could be intimidated by the seeming complexity of the wiry beast. Instead, you turn it on, select the program you want to run, observe on the display screen that things are as you want them to be and press some keys to make other things happen. How it happens and the components that make it happen are hidden from you.

Hiding is an important characteristic of Ada. We call it "information hiding" and use the term information in a very broad sense. We also use the term

"levels of abstraction" to mean that we have no need to deal with implementation details; we only need to deal with the details necessary to do the work at hand.

Ada extends the idea of information hiding and abstraction so they become features of the language. These features, in turn, evolve into other features such

as modularity, localization and the concept of generic software components. This last idea, components, is carried to a very high level of sophistication in Ada.

There are three fundamental components in Ada: package, subprograms and tasks.

These can be decomposed into

## Why not the best?



**HP 1000,  
HP 3000, &  
HP 9000  
150 Megabyte  
& 2 Gigabyte  
Streaming Tapes**  
Unattended backup  
of all your data on a  
single ultra-compact  
cartridge.  
Media translation &  
SSS update service  
available

### Also available:

#### HP 1000 Memory Expansion

Improves system performance. Free evaluation.  
512 KB to 32 MB expandable cards. 2 year warranty

#### High Performance SCSI Interfaces for HP 1000, HP 3000, & HP 9000

Superior to IEEE-488. Used with all Herstal  
Automation peripherals

#### HP 1000 & HP 9000 Disc Drives

65 MB to 638 MB. 30,000 hour MTBF.  
Up to 7 drives per interface

#### HP 1000 & HP 9000 Optical Discs

1 Gigabyte Erasable and "Write Once". Ideal for  
information retrieval and archival data storage

#### Ramdisc/1000 Speeds up file access

#### Superclock/1000 Automatic time & date



*"I promise you —  
no service hassles, no  
matter who is servicing  
your HP system."*

Rick Walsh  
President



**HERSTAL**

**AUTOMATION LTD.**

3171 West Twelve Mile Road  
Berkley, Michigan, USA 48072  
Telex 650-321-1560  
FAX 313-548-2010  
Phone 313-548-2001

CIRCLE 115 ON READER CARD



# With Type Director And Your LaserJet, You've Got A Whole New Avenue To Explore In Producing Documents.

Great typefaces. All the top art directors on Madison Avenue use them to help their ads grab people's attention.



And now, thanks to Type Director™, you can use them to help get the same kind of attention for your documents.

**Co-developed By Hewlett-Packard.** Type Director is the fastest, easiest-to-use font generation program you can own for your PC. A joint development of Hewlett-Packard and AGFA Compugraphic Division, it adds remarkable power to your LaserJet® printer to produce documents that look like they were prepared by communications specialists. It's ideal for all word processing and desktop publishing applications from the simplest memos to multi-page newsletters.

**Compugraphic. One Of The Biggest Names In Type.** When you think about it, it shouldn't come as a surprise. After all, AGFA Compugraphic is a supplier of typefaces to top advertising agencies, printers and publishers everywhere. Its typeface library is the biggest and best in the world, with over 1700 typefaces.

**The Big And The Small Of It.** A high-performance scaling technology found only in Type Director lets you make each typeface bigger or smaller until it's the exact size you want, from a tiny 4 points to a huge 200 points. But no matter what size you finally do decide on, each character will be crisp, clear and handsome.

We've Seen To It That There Are No Surprises.

When you're using Type Director, you see the characters on your screen exactly as they'll appear in your output. There are no surprises when you print out the results. And you get the fonts you need in just a few moments—decidedly more quickly than with any other software available today.

**You'll Wonder How You Managed Without It.** What is Type Director's impact on the fonts you're using now? Not to worry. Type Director will easily manage any "soft fonts" you may have as long as they're Hewlett-Packard LaserJet compatible.

(Most are.) By converting to

Type Director, you protect your investment while making your desktop publishing system much more flexible and useful.

**Type Director Does It All.**

Think about it. Type Director lets you generate characters, monitor and manage your library of typefaces, automatically install them in your application, and immediately send them to your printer—all by touching just a few keys.

**Learn By Doing, Not By Reading.** Type Director is incredibly

#### Type Director Compatibility Information.

Type Director is fully compatible\* with the following:  
COMPUTERS: IBM XT, AT, Personal System/2 and compatibles with hard disk, 640K bytes RAM, running MS-DOS or OS/2. PRINTERS: Hewlett-Packard LaserJet PLUS; LaserJet 500 PLUS; LaserJet 2000; LaserJet Series II; LaserJet IID and compatibles. APPLICATIONS/ENVIRONMENTS: Aldus PageMaker 1A and 3.0; Xerox Ventura Publisher 2.0; Microsoft Word 4.0 and 5.0; Microsoft Windows 2.03 and 2.1; WordPerfect 5.0; Other software programs supporting LaserJet "soft fonts". DISPLAYS: VGA; CGA; EGA; Hercules Monochrome; AT&T 6300; Xerox PC Full Page Display; WYSE 700 Graphics; Compaq; Monochrome; Hi Res Monitor (96x96); Hi Res Monitor (100x100).

\*For compatibility information on unlisted printers, displays and applications, phone 1-800-873-FONT.



simple to use.

It's entirely menu-driven, so there's no thick manual to have to hunt through. All you do is respond to the prompts on the screen. A built-in HELP function handles any questions that may arise.

**Go Creative With Your Documents Now.** You don't have to wait any longer. Your documents can

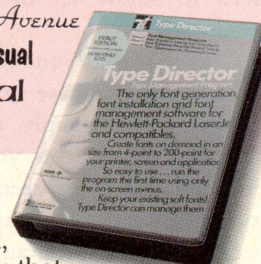
### Save \$455 On Our Type Director Debut Edition.

Priced separately you'd pay \$680 for Type Director and our Debut Edition of typefaces, but order now and they're yours for only \$225.

Here's what you receive at one great price:

- Type Director Font Management Program
- Vol. 1 Four typefaces from the CG Times family
- Vol. 2 Four typefaces from the Univers family
- Vol. 3 From the Decorative collection:

Park Avenue  
Dom Casual  
Uncial  
Brush



have that distinctive, professional, creative edge that gets attention now. All it takes is Type Director. And all it takes to get Type Director is visiting your local Hewlett-Packard dealer, returning the order form adjacent to this ad, or calling our convenient Type Director hotline right now at 1-800-873-FONT.

**AGFA** Agfa

AGFA COMPUGRAPHIC DIVISION

Type Director is a trademark of Compugraphic Corporation. Ventura Publisher is a registered trademark of Ventura Software, Inc. Microsoft Windows, MS-DOS, and Microsoft Word are registered trademarks of Microsoft Corp. CGA, EGA, and VGA are trademarks of International Business Machines Corporation. Hercules is a trademark of Hercules Computer Technology. Wyse is a registered trademark of Wyse Technology Inc. Hewlett-Packard LaserJet is a registered trademark of Hewlett-Packard Corporation. PageMaker is a registered trademark of Aldus Corporation. WordPerfect is a registered trademark of WordPerfect Corporation. Other brand or product names are trademarks or registered trademarks of their respective holders. © 1989 Agfa Corporation.

CIRCLE 177 ON READER CARD



## Use Type Director To Make Documents More Professional. Send In This Form Today.

- ☐ I need Type Director™ to produce professional-looking documents. Rush me the items indicated.  
☐ Please send more information.

QTY	ITEM	PRICE*
	Type Director Debut Edition, MS/DOS (Includes 12 Typefaces: Volumes 1,2,3)	\$225
	Type Director Debut Edition, OS/2 (Includes 12 Typefaces: Volumes 1,2,3)	\$225
	Type Director Font Management Program (Includes 2 Typefaces: CGTimes, <b>Univers Bold</b> )	\$95
	Vol. 1: CGTimes†	\$195
	Vol. 2: Univers†	\$195
	Vol. 3: Decorative† (See ad)	\$195
	Vol. 4: CG Triumvirate†	\$195
	Vol. 5: Univers Condensed†	\$195
	Vol. 6: Futura II†	\$195
	Vol. 7: Microstyle†	\$195
	Vol. 8: Decorative† (ITC Zapf Dingbats 100,200,300)	\$195
	Vol. 9: CG Century Schoolbook†	\$195
	Vol. 10: ITC Benguiat†	\$195
	Vol. 11: ITC Lubalin Graph†	\$195
	Vol. 12: ITC Avant Garde Gothic†	\$195
	Vol. 13: ITC Souvenir†	\$195
	Vol. 14: Garamond Antiqua†	\$195

Subtotal	
Applicable state and local sales tax	
Shipping/handling (\$5 per item)	
Total order	

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_  
(No P.O. boxes please)

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_ Country \_\_\_\_\_

Phone (\_\_\_\_) \_\_\_\_\_ Ext. \_\_\_\_\_

Every effort will be made to ship your order within 24 hours. All shipments are via Federal Express; please indicate street address since Federal Express can not deliver to a post office box.

☐ Check or money order enclosed payable to: AGFA Compugraphic. ☐ MasterCard ☐ Visa

Account No. \_\_\_\_\_

Exp. \_\_\_\_\_ Today's Date \_\_\_\_\_

Signature \_\_\_\_\_

**Order Hotline 1-800-873-FONT**



AGFA COMPUGRAPHIC DIVISION

90 Industrial Way, MS 90-1-3C  
 Wilmington, MA 01887-9945  
 (508) 658-5600 Ext. 2484/2485

\*Prices stated in U.S. dollars and subject to change without notice.

†All products come with MS-DOS & OS/2 compatible diskettes unless otherwise noted. Each volume contains 4 typefaces from the family listed unless otherwise noted.

**CIRCLE 177 ON READER CARD**

### Ada

Bull HN Information Systems Inc.  
 200 Smith St.  
 Waltham, MA 02154  
 (617) 895-6000  
**CIRCLE 360 ON READER CARD**

Hewlett-Packard  
 3000 Hanover St.  
 Palo Alto, CA 94304  
**CIRCLE 359 ON READER CARD**

Irvine Compiler Corp.  
 18021 Skypark Circle  
 Suite L  
 Irvine, CA 92714  
**CIRCLE 358 ON READER CARD**  
 CRI  
 5333 Betsy Ross Dr.  
 P.O. Box 58004  
 Santa Clara, CA 95052  
**CIRCLE 357 ON READER CARD**

other components that we shall look at as we proceed. In addition, some of the above components can be coded as a "generic."

The Ada package is a collection of subprograms, specifications and type declarations. It is somewhat analogous to the PASCAL "UNIT." Packages may be nested and may be included within subprograms.

The package consists of two parts: the specification and the body. The specification is that part of the package that will be seen by a user of the package. The body typically is hidden. Sometimes the specification is called a "window" into the package. The body contains the implementation algorithms.

### Create New Data Types

One of Ada's powerful features is the ability to create completely new data types. That is, a class of data for which we define the operations and values permitted for variables of that type. In this respect, Ada is far more powerful than

PASCAL and certainly more powerful than COBOL or FORTRAN.

As an example, suppose we require that a group of subprograms perform arithmetic on fractions. In most languages, we convert a fraction such as 14/77 or 7/15 to a decimal and then perform the arithmetic. In Ada we can create a new data type and set of arithmetic operations for data of type fraction. The programmer only needs to code statements such as:

```
A : FRACTION__TYPE := 9/17;
B : FRACTION__TYPE := 3/51;
X : FRACTION__TYPE;

X := A + B;
```

and Ada will enter the result 10/17 in X. In this case, the decimal fraction result (.5882352) is the same whether we do the fraction arithmetic or convert each fraction to a decimal number first and then perform addition. However, in situations where there are large numbers of fractions with many decimal places precision, it is more appropriate to retain the fractional form throughout all calculations before converting to a decimal fraction.

The mathematically trained reader will see at once the possibilities for statistics, numerical analysis and many forms of engineering mathematics. But this capability also has great value in business data processing where reliability is equally important.

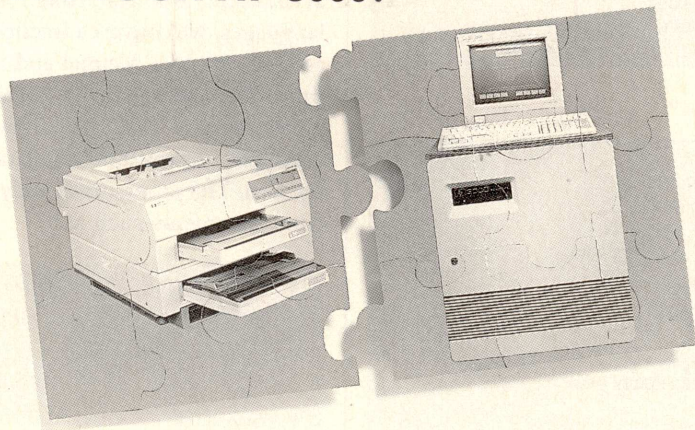
In an accounting environment, we have always had to contend with the problem that programmers do not understand debits and credits. In Ada, we can create a completely new set of data types named "asset\_\_type" and "liability\_\_type" and define the permitted set of operations for those types. Let's name those operations debit and credit. Then we have:

```
CASH : asset__type;
SALE : liability__type;
LOAN : liability__type;
LOAN_PAYMENT : liability__type;
```



# LASERSOFT™ / JetSetter

**SOLVES THE PUZZLE OF LASER PRINTING  
FROM YOUR HP 3000!**



- PRINT USER REPORTS ON PLAIN WHITE PAPER

- PAGE SET UP

- USE DOWNLOADABLE FONTS ON YOUR HP 3000



For additional information, call or write:

BUSINESS SYSTEMS INTERNATIONAL, 20942 OSBORNE STREET, CANOGA PARK, CA 91304 (818) 998-7227.

CIRCLE 107 ON READER CARD

# FAX 3000

The powerful  
new software  
that sends  
faxes directly  
from your  
HP3000

Use it to send:

- Letters
- Invoices
- Purchase Orders
- Special Forms
- and Much More!



STR SOFTWARE COMPANY

3601 SWEETHORN COURT

Call: (703) 689-2525

FAIRFAX, VA 22033

Fax: (703) 689-4632

CIRCLE 179 ON READER CARD

and we could build a complete general ledger system around the idea of debits and credits so the programmer would never have to be confused about when to add or subtract any particular kind of account.

We could have code that reads:

```
debit(CASH, 500.20)
or
credit(LOAN, 30.57)
```

and have a program that is completely readable by someone with an accounting background. We could restrict the operations on `asset_type` and `liability_type` to only debit and credit. The programmer would not be able to explicitly add one `asset_type` to another or subtract some value from a variable of either type. This example could be carried to a high level of sophistication to include permitted operations to include such things as "balance," "sub\_total" or "total."

The items of each data type could be enclosed in a composite data type such as an array or a record. It's not the intention of this article to describe a complete general ledger system, but the illustration should indicate the possibilities. Moreover, the point is that you aren't restricted to a traditional programming view of the data. You can create new data types that more closely represent the view of the discipline you're attempting to model. This feature of Ada is valuable in disciplines as wide-ranging as the vocabulary and operations associated with organic chemistry to the abstract language of artificial intelligence. You can, in effect, build a language within a language.

Ada raises the level of language power one more notch with a concept it calls "generics." In every programming environment, there are certain procedures or groups of procedures we code over and over. Frequently, these procedures only vary in the type of data (range, size or permitted operations) they access. Ada permits us to create templates called "generics" to eliminate

HP PROFESSIONAL



the need to replicate code. An example of a long-standing generic from the existing programming environment is the SORT. Normally we invoke the generic SORT and, tell it the characteristics of the data to be sorted. It then generates a new version of the sort program with those new characteristics and does its thing. Ada has, as a language feature, the capability for creating generic program units.

One HP software developer, CRI (Santa Clara, CA) rewrote its main product, RELATE/DB in Ada for the DEC VAX environment and surprised itself. The use of Ada's generic capability greatly reduced the number of lines of source code required to port its HP product to the VAX. Unfortunately, they cannot use this work on the HP 3000 because of HP's delays in getting an Ada compiler ready for MPE. Too bad! Other developers have had the same experience where they were able to think carefully about their system. Also, not only do

generics reduce the lines of original source code in a program, the resulting program is much easier to maintain.

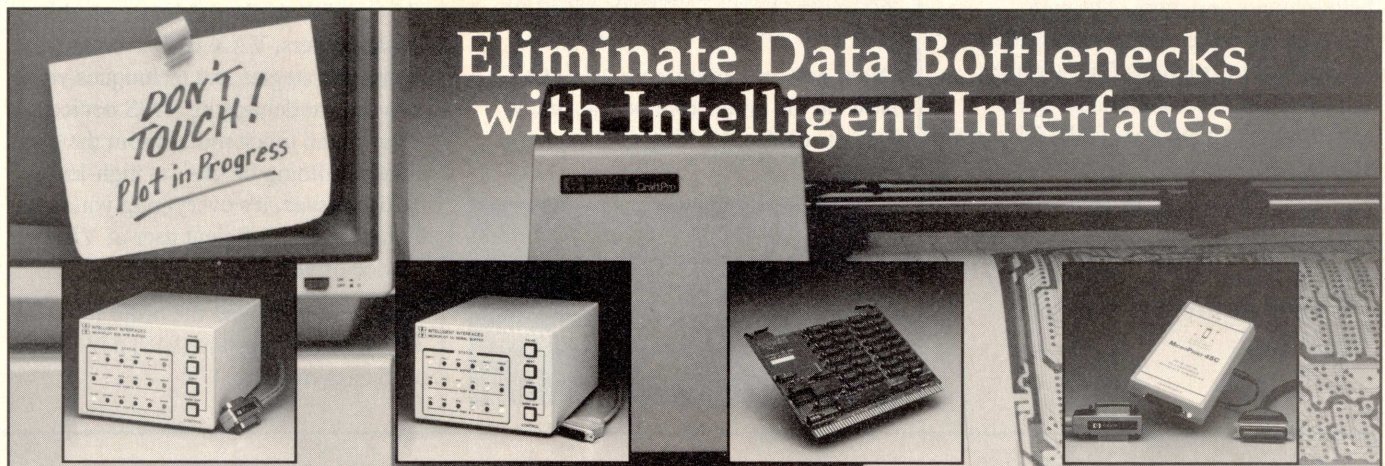
It is true that Ada has not yet caught on in a big way in the civilian sector. It has been adopted by the FAA for the new air traffic control system, and NASA is using it for new software development in embedded systems. Also, many universities now are offering Ada as a first course in structured computer programming. But MIS directors have been frightened off by its formidable appearance. For one thing, it doesn't look like the languages they are use to. For another, to use it, their programmers must change the way they think about programming. In fact, Ada is a language for "software engineering," not programming.

Software engineering implies that there is a new level of discipline and agreed upon principles for the creation of software systems. Admittedly, software engineering is still an emerging

discipline. The emergence is accelerating and bringing with it new technologies for building software systems. Ada is one of those technologies. And, as usual, the advent of a new technology leaves some people behind.

Over the next five years, as more university graduates enter the marketplace with Ada training and the economics of Ada software engineering become apparent to the civilian computer domain, we will see more and more important systems built in Ada. IBM, DEC, Tandem, UNISYS, PRIME and a wide range of other hardware vendors have one or more Ada compilers for their main line of hardware. HP's MPE should not continue to be an Ada orphan. Too much depends on it for the future. —Richard Riehle is an instructor of Ada at Foothill College, Los Altos Hills, CA and Merritt College, Oakland, CA.

Would you like to continue to see articles on this topic?  
Circle on reader card  
yes 328 no 327



## Eliminate Data Bottlenecks with Intelligent Interfaces

### HPIB Buffers

**MicroPlot 80 Series**  
free HP CAD/CAM/CAE work stations from time-consuming data output. Gain at least 5:1 improvement in computer utilization.

- Expandable 256K - 8 megabyte memory
- Multiple copy & plot queuing eliminate delays
- Full status monitoring
- Prices start at \$995

**MicroPlot 70 Series**  
Ideal for large printing or small plotting applications.

- Expandable 256K - 1 megabyte memory
- Plot queuing, pause, copy and purge functions
- Prices start at \$845

### RS-232 Buffers

**MicroPlot 55 Series**  
free 286/386 PC workstations. Realize all the computer utilization efficiencies during printer/plotter operations as the MicroPlot 80/70 Series. Same features plus:

- Automatic learn mode for end-of-plot sequences
- Supports all popular hardware/software protocols including "HP-Mode"
- Baud rates > 100K baud
- Prices start at \$995

### HP 200/300 Memory Expansion Board

**MicroRAM - \$775**  
1 megabyte memory expansion board for HP Series 200/300 computers.

- Easy snap-in installation
- Fully compatible with HP boards
- Switch selectable addressing

**GPIB-1000 - \$199**  
IEEE-488 interface card for PCs and compatibles.


### HPIB ↔ Centronics Converters

**MicroPrint 45 Series**  
Has become the industry standard to reliably interface Centronics printers with HP computers (45C), or HPIB peripherals to PCs (45H).

- No programming needed
- Transparent to operating system
- Switch selectable HPIB address/Listen Always
- Prices start at \$199

**call 800-842-0888**

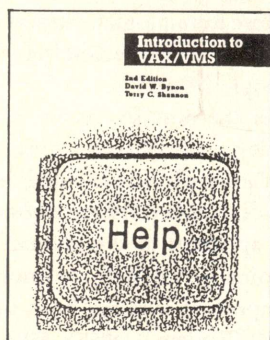
High-power HP and PC users shouldn't have to wait for output or be restricted in choice of peripherals. Allow us to be your single source for cost-effective interfaces. With each product comes a one-year parts and labor warranty AND 30-day money-back guarantee. 24-hour service is standard.



**INTELLIGENT  
INTERFACES Inc.**  
P.O. Box 1486  
Stone Mountain, GA 30086-1486  
404-381-9891 • Telex 9102502628



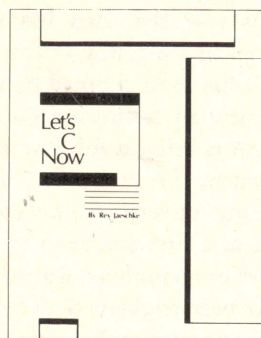
# **MUST Reading Computing Books From Professional Press**



## **Introduction to VAX/VMS, Second Edition**

Introduction to VAX/VMS is a guide for beginners and a reference for the experienced user. From the basics to systems and programming, Introduction to VAX/VMS gives easy to follow instructions about the VAX computer family, DCL command language, command procedures, mail, backup and help features and more. Through pictures, examples and programs, you get explicit instructions for everyday use of VAX/VMS and tips for problems. Plus 8 Appendices and a Glossary for added reference.

Order Introduction to VAX/VMS now. Complete the form below or call Trish at (215) 542-7008 (9-5 eastern time) with credit card information.

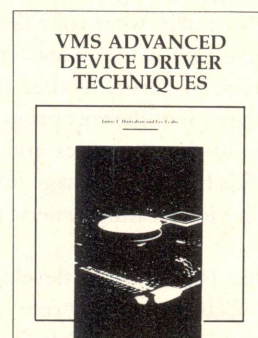


## **Let's C Now**

Let's C Now is a self teaching guide to the C language in two volumes. It has all the information you need to learn C language, from the basics to expert use and understanding. Twenty-six informative chapters with tested examples, author's tips and suggestions make it easy to learn, even if you're not a computing expert. Use "C" on any operating system with DEC hardware (primarily for VAX and PDP).

Order one or both volumes of Let's C Now on the order form below, or call Trish at (215) 542-7008 (9-5 eastern time).

**Complete and mail the form below  
with payment to order  
1, 2 or all 3 of these  
important computer handbooks  
NOW!**



## **NEW . . . VMS Advanced Device Driver Techniques**

By Experts Lee Leahy of Digital Equipment Corporation and Jamie Hanrahan of Simpack Associates VMS Advanced Device Driver Techniques describes how to design, implement and debug device drivers for the VMS Version 5 operating system. Learn more about simple VMS device drivers, full duplex and state machine-based drivers, VAX BI Drivers, advanced strategies and techniques you can use for debugging VMS device drivers and much more. From the low-level "building blocks" to high-level design issues, it's everything you need to become a proficient user of VMS device drivers.

Order now. Fill out the order form below or call Trish at (215) 542-7008 (9-5 eastern time).

☒ **YES!** I want to complete my computing library with one or more of these important computing handbooks from Professional Press!

Name of Book	Number of copies	Shipping/Handling (per book)	Total \$
VMS Advanced Device Driver Techniques at \$59.95 each		US \$3.00, Canada \$5.00	
Introduction to VAX/VMS Second Edition at \$29.95 each		US \$2.00, Canada \$4.00	
Let's C Now Volume 1 at \$22.95 each		US \$2.00, Canada \$4.00	
Volume 2 at \$22.95 each		US \$2.00, Canada \$4.00	
Volumes 1 and 2 at \$42.95 per set		US \$2.00, Canada \$4.00	
<b>Total Number of Books</b>		<b>Total \$</b>	

☐ Check/Money Order enclosed ☐ Please charge: ☐ VISA ☐ MasterCard

Account Number \_\_\_\_\_ Exp. Date \_\_\_\_ / \_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_ Telephone ( ) \_\_\_\_\_

☐ Call me with multiple copy discounts

**Mail or FAX this form to: Professional Press, Inc., P.O. Box 503, Spring House, PA 19477 (215)542-7008 ■ FAX (215)628-2845**



# EasyReporter™

the ultimate in end-user computing

Finally! Computer software that is genuinely designed for use by personnel outside the d.p. dept.

Your users can:

- write reports
- do on-line inquiry screens
- download results to PC's
- turn their reports into graphs

...all, without programming

...all, with your tight control of the system.

EasyReporter is a fine complement to your POWERHOUSE, SPEEDWARE or 3GL environment that your users will appreciate.

To find out more about EasyReporter, the ultimate end-user computing tool contact us at:

(416) 678-1841 Marketing Dept.  
7420 Airport Road  
Suite 201  
Mississauga, Ontario  
L4T 4E5

In Europe: London (01) 828-1897

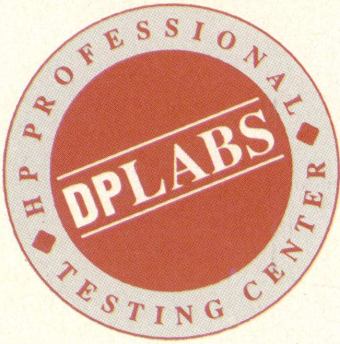
Infocentre Corporation

**info**centre

CIRCLE 172 ON READER CARD

New York, Los Angeles, Montreal, Toronto, London, Paris,  
Sydney, Washington D.C., Chicago, San Francisco





# from the lab

## Bradford's Text Editor

**By Del Lukens**

It's surprising how much extra effort is needed to use HP's Edit/3000. After years of using this line editor, I forgot how difficult it was when I was just starting out. In the beginning, I had to develop a certain mind set to help overcome the shortcomings of a line editor. But, with a little brute force, I eventually became proficient in using it.

SPEEDEDIT from Bradford Business Systems, (Laguna Hills, CA) however, is a full-screen text editor loaded with additional features that can transform your program development and document processing environment. The installation tape includes stream jobs that build the necessary accounting structure and restores the software. Total installation time is about 10 minutes. The software is up and running immediately with no configuration or other overhead. SPEEDEDIT runs on any HP 3000 running the current release of MPE.

This editor is extremely easy to use. There is a brief, self-paced tutorial that guides the new user through the basic commands and uses of the function keys. While the commands are somewhat intuitive, some mental reprogramming may be required if you have used HP's Edit/3000 for a long time. The tutorial is an excellent, on-line tool for getting the most out of SPEEDEDIT quickly and painlessly.

A welcomed feature of this software package is its documentation. Two manuals come with the software: One is a command reference booklet that lists all the commands with a brief description and example.

The other manual is 350 pages. It's hard to imagine an editor with a 350-page manual, but it's clearly written and in a format that will lend itself to reference purposes after you become familiar with the package. Each page is consistent in format and layout. The top half of the page lists the command name, the intended purpose for using it, the syntax and the options or features available. The bottom half describes in detail what the command does, how and when to use it and usually includes an example or two. *Figure 1* shows an example of the page for the KEEP command.

One reason for such a large manual is the amount of features built into SPEEDEDIT. The following are of particular interest:

- Compile source files without leaving the editor. There is support for COBOL-1, COBOL-II, SPL, FORTRAN, PASCAL and RPG.
- Built-in reminder files. These operate like tickler files and can be set up for account wide-use. There also is a date function that holds the reminder file until the specified date.
- Revision marking. This feature puts a date stamp and revision code on each line of text as it is added or changed.
- Built-in messages. This capability allows users to send and receive electronic mail messages. Once it's set up any user can send mail to others. It also

will remind you at log on how many messages you have received, who they're from and the subject.

- On-screen sorting and math capabilities.

The edit files generated with this editor are completely compatible with HP's Edit/3000. No conversion of your existing files is needed. It doesn't use Block Mode and runs well on just about any HP compatible terminal. There are many additional features included with the SPEEDEDIT package. A demo is available from Bradford Business Systems for \$100. If you decide to buy it, the \$100 is applied toward the purchase price.

### SPEEDEDIT

#### SYSTEM REQUIREMENTS/PLATFORMS:

MPE and MPE/XL, PC version (BBS-PRISM) available for DOS and OS/2

**PRICE:** \$4,500 unlimited use on single CPU, Micro 3000, 3000/935, or \$5,000 for 950 and 955 systems

### BRADFORD BUSINESS SYSTEMS INC.

#### HEADQUARTERS:

25301 Cabot Rd.  
Suite 201  
Laguna Hills, CA 92653  
(714) 859-4428

**FOUNDED:** 1979

**PRODUCT LINE:** SPEEDEDIT, SPEEDDOC, BBS-PRISM, PCCAL, SPEEDCOPY, STUDY/3000, SCAN/3000, SPELL/3000

**OWNERSHIP:** Corporation

CIRCLE 298 ON READER CARD



## FIGURE

SPEEDEDIT (C) 1982 Bradford Business Systems, Inc.

**KEEP**

Abbreviation:

**KP**

**PURPOSE:** Saves the current work (text) file either under its' current name or under another name if given.

**SYNTAX:** KEEP or KEEP ? or KEEP filename

**COMMAND KEY** ● **CONTROL-Y** ○  
**CONTROL-Y BREAKABLE** ○

**GENERAL USAGE** ○  
**INTERMEDIATE** ●  
**ADVANCED** ○

**WORD PROCESSING** ●  
**PROGRAMMING** ●  
**UTILITY** ●

The KEEP command saves a copy of the current text under the name given. If no name is included as part of the KEEP command the name of the current file is used. The KEEP command will save all lines and is not affected by the currently defined window.

If the KEEP command is followed by a question mark (?), the file will only be kept if changes have been made since the file was last kept. If no changes have been made since the last keep, the KEEP ? command will be disregarded.

The KEEP ? command is most useful when included as a command in an XEQ file. When the XEQ file containing the KEEP ? command is executed, the file will only be kept if necessary. Bypassing an unnecessary KEEP may save substantial time. Please refer to the sections regarding the XEQ and SET AUTOXEQ commands for further information about execute functions.

If the KEEP command is followed by an exclamation point (!), the file will be kept immediately without any questions. You will not be asked if you wish to purge the old copy of the file.

For saves of only some of the lines in the current file see the description of the HOLD command.

BUY • SELL • MAINTENANCE

# HP1000 HP3000 HP9000 HP Compatibles

*World Class Service*



*World Class Savings*

- SYSTEMS
- DISC DRIVES
- TERMINALS
- MEMORY
- I/O EXPANSION
- PRINTERS
- PLOTTERS

*LARGE INVENTORY  
GUARANTEED MAINTENANCE  
BEST PRICES*

**COMPUTECH**  
SYSTEMS CORPORATION

2721 152nd Ave. N.E.  
Redmond, WA 98052

**(206) 883-4107**  
**1-800-882-0201 (US)**  
FAX: (206) 881-2482

CIRCLE 167 ON READER CARD



# Printer Gems

By David B. Miller

Do your users get most of their daily exercise adding paper to your LaserJet? Let's face it, the paper trays that come with most desktop laser printers are inadequate for busy office use. Not only is it annoying to keep refilling the tray, the constant pulling out and pushing in required to change the paper contributes to the wear and tear the printer receives.

BigBin, from Laser Connection Inc. (Mobile, AL) is a single-bin sheet feeder capable of holding up to 1,000 sheets of paper in weights of 16, 20 and 24 pounds. A legal-sized paper adapter is optional. The unit fits on laser printers equipped with the Canon SX, Ricoh 4080/81 or Ricoh 4150 engines.

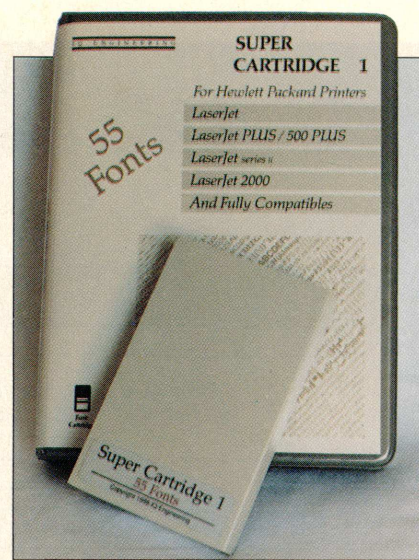
BigBin is easy to install. The documentation is very clear and leaves no questions unanswered.

For Canon SX-based printers, a pedestal used to raise the printer to the proper height comes with the paper-feeder unit. The pedestal has slots that hold a ream of paper and two additional font cartridges.

After removing the original paper tray, simply place the printer on the pedestal and slide BigBin into the vacant paper tray slot. A power cord supplied with BigBin connects the feeder unit to the printer's power socket. The power cord that came with your printer runs from the feeder to a wall outlet.

BigBin powers up as soon as it's plugged in. No power switch is on the unit. If you need to power everything down, make sure you unplug the power cord from the wall socket; switching the printer off won't turn off BigBin.

When the cover is opened, the paper elevator is lowered to allow paper to be loaded. Laser Connection doesn't recommend vellum, card stock, labels, embossed paper, multipart forms, paper with rough edges, paper heavier than 25 pounds or other special stock. If you use



*Super Cartridge 1 replaces standard LaserJet font cartridges.*

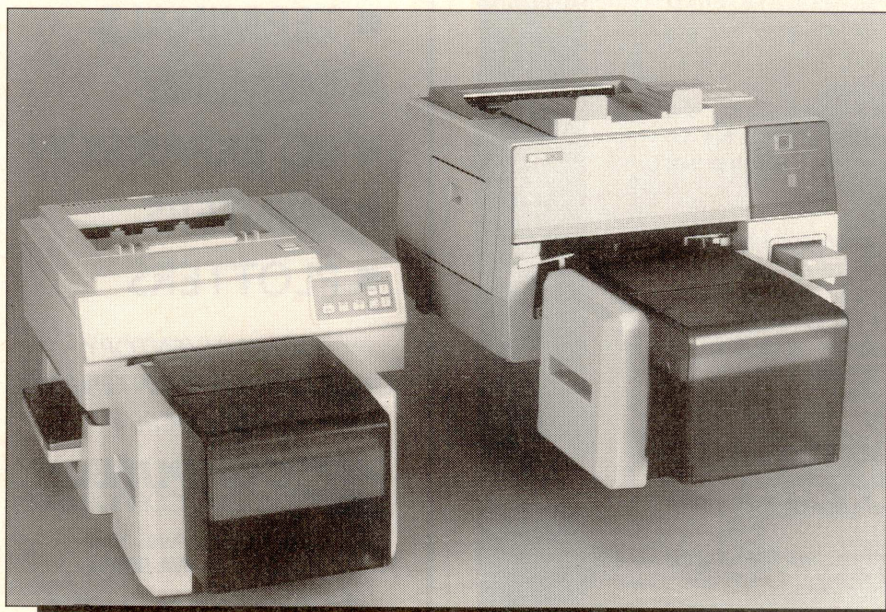
special forms from time to time, you might have to stick with your original methods. After closing the door, the paper is lifted automatically to the correct height and a single sheet is fed partially into the printer.

We found few problems with BigBin. There was a minor problem when the bin was pulled out slightly and refused to function. Over time, loading paper into the bin probably unseated it enough to cause the problem. A clamp mechanism might help keep the bin closer to the printer and keep the paper tray firmly seated in the printer's paper path opening.

BigBin is noisier than the original paper tray, as more gears and motors are involved. We found the sound to be unobtrusive, but it should be a consideration in very quiet environments.

## Super Cartridge 1

If you're tired of working with downloadable fonts or of having to change font cartridges frequently on your LaserJet or 100 percent compatible printer, Super Cartridge 1 can help. Super Cartridge 1, from IQ Engineer-



*Laser Connection's BigBin is available for the HP LaserJet and DEC LN03 printers, as well as a variety of Canon and Ricoh print-engine-based laser printers.*



ing, is distributed and supported by Do It Marketing Resources, both of Sunnyvale, CA.

Super Cartridge 1 provides 55 fonts and 10 typefaces in both portrait and landscape orientations. Point sizes can range from 4 to 16. While providing the additional capability, Super Cartridge 1 users should be able to plug the cartridge into their LaserJet and experience no compatibility problems with their original cartridges. Some sample fonts are shown in *Figure 1*.

Escape sequences used to select fonts and to perform other printer duties remain unchanged from those of the original cartridges. Because Super Cartridge 1 combines the fonts of many original cartridges, you won't have to change cartridges often, if at all. The user sees no difference. At the same time, Super Cartridge 1 shouldn't conflict with any downloadable fonts you currently use.

In addition to the standard character sets, several special-purpose fonts are included.

The Line Draw and PC Line fonts provide compatibility with previous

## BigBin

**PLATFORMS:** Laser printers using the Canon SX or Ricoh 4080/81/4150 print engines

**PRICE:** \$795

### LASER CONNECTION INC.

**HEADQUARTERS:**

7852 Schillingers Park W.  
Mobile, AL 36608  
(205) 633-7223

**FOUNDED:** 1977

**PRODUCT LINE:** Laser printers and supplies

**OWNERSHIP:** Public. A wholly owned subsidiary of QMS Inc. (NYSE: AQM)

CIRCLE 269 ON READER CARD

cartridges and offer line drawing characters found in the IBM PC's and compatibles' line drawing character set.

The Pi-X, a 10-point font, is a collection of legal, foreign and national symbols, line drawing, mathematical and other special characters.

## Super Cartridge 1

**PLATFORMS:** HP LaserJet and 100 percent compatible printers

**PRICE:** \$499

### DO IT MARKETING RESOURCES

**HEADQUARTERS:**

1689 Canary Dr.  
Sunnyvale, CA 94087  
(408) 736-3000

**FOUNDED:** 1987

**PRODUCT LINE:** Cartridge-based printer products

**OWNERSHIP:** Partnership

CIRCLE 268 ON READER CARD

The Math8A font includes a full Greek alphabet plus other special characters in 10 and 7 points. Mathematical characters, such as integration symbols and square roots, can be found in the Math8B font in 10 and 7 points.

We're using the Super Cartridge 1 in place of our Hewlett-Packard M-Z cartridge. Because we use Microsystems Engineering Corporation's Mass-11 for word processing, we simply set up Mass-11's system parameter file to map the desired font with a Mass-11 font number. We also increased Mass-11's vertical space units parameter by 25 percent to improve readability.

Super Cartridge 1 provides compatibility with the full range of HP A to Z font cartridges. Very few differences exist. In some special cases, fonts provided by an HP cartridge aren't available with the Super Cartridge 1. For example, the HP T cartridge TaxDraw typeface isn't available with the Super Cartridge 1.

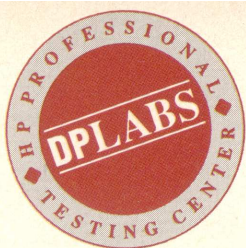
In some cases, Super Cartridge 1

## FIGURE

Helvetica 8 point  
Line Printer 8.5 point  
Times Roman 10 point  
Helvetica Italic 10 point  
Times Roman Bold 10 point  
Prestige Elite 10 point  
Courier Bold 10 point  
Helvetica 12 point  
Times Roman Italic 12 point  
Letter Gothic Italic 12 point  
Helvetica Bold 14 point  
Letter Gothic 14 point  
Times Roman Bold 14 point  
PRESENTATION BOLD 16 POINT

*A small sample of the 55 available Super Cartridge 1 fonts.*





will substitute fonts. For example, older, variable-pitch fonts have been superseded by fonts in HP's Z cartridge. Rather than provide both fonts, the Super Cartridge 1 opts for the newer, improved Z-type fonts.

Unless you're doing highly specialized printing, you'll encounter no problems with Super Cartridge 1's equivalents to HP A to Z fonts. In most cases, the Super Cartridge 1 equivalent is an improvement over the corresponding HP font.

Power users who need to change fonts and orientations often should be thrilled with Super Cartridge 1. Escape sequences follow an eight-tier hierarchy. From highest to lowest priority, the tiers are Orientation, Symbol Set, Proportional Font Spacing, Pitch, Point Size, Style, Boldness and Typeface. The hierarchy helps eliminate long escape se-

quences. You only need to supply the portion of the escape sequence needed to invoke the features you desire.

For example, changing pitch only requires that you supply the portion of the escape sequence that affects pitch, if you want everything else to remain the same. The manual provides a detailed

explanation of the escape sequence priority scheme and to what extent you can abbreviate sequences.

Super Cartridge 1's documentation provides an excellent complement to your laser printer's manuals. Many examples of font selection sequences are provided.

Canon U.S.A. Inc.  
5 Dedrick Pl.  
W. Caldwell, NJ 07006  
CIRCLE 267 ON READER CARD

Digital Equipment Corp.  
146 Main St.  
Maynard, MA 01754  
CIRCLE 266 ON READER CARD

Hewlett-Packard  
3000 Hanover St.  
Palo Alto, CA 94304  
CIRCLE 265 ON READER CARD

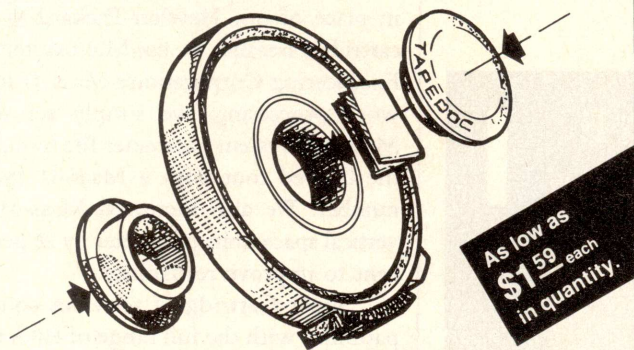
IQ Engineering  
P.O. Box 60955  
Sunnyvale, CA 94086  
CIRCLE 264 ON READER CARD

Microsystems Engineering Corp.  
2400 W. Hassell Rd.  
Hoffman Estates, IL 60195  
CIRCLE 263 ON READER CARD

QMS Inc.  
One Magnum Pass  
Mobile, AL 36618  
CIRCLE 262 ON READER CARD

Ricoh Corp.  
One Cannon Plaza  
Lake Success, NY 11042  
CIRCLE 261 ON READER CARD

## Plug the documentation hole in your information storage system!



### With the remarkable TAPEDOC™ tape documentation hub.

- Stores up to eight pages of directory information with each tape.
- Does not interfere with tape storage in a standard rack.

To order or for more information, contact:

## TAPEDOC

P.O. Box 39550  
Phoenix, Arizona 85069  
(602) 241-8470

TAPEDOC is a trademark of Computer Systems Engineering, Inc., Phoenix, Arizona.

CIRCLE 147 ON READER CARD

## REPRINTS?

If you would like reprints of any article or advertisement, contact Reprint Resources, 155 Commerce St., Fort Washington, PA 19034 (215) 643-9143, FAX (215) 643-9164.

UNIX is a registered trademark of AT&T in the U.S.A. and in other countries.

MS-DOS is a trademark of Microsoft.

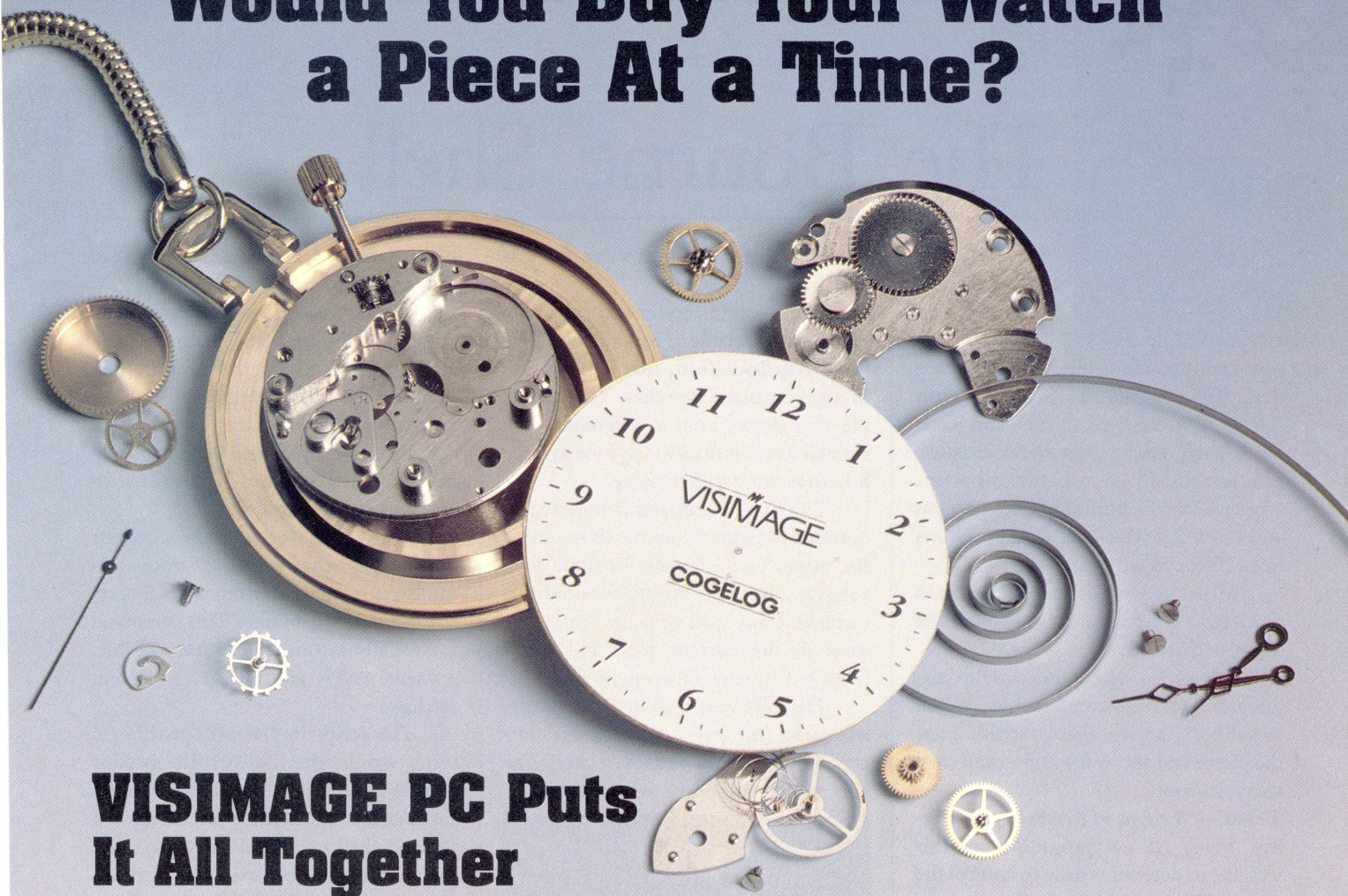
Macintosh is a trademark of Apple Computer Inc.

X Window System is a trademark of MIT.

Microsoft is a registered trademark of Microsoft Corp.



# Would You Buy Your Watch a Piece At a Time?



## VISIMAGE PC Puts It All Together



### Report Writing

Simple and detailed reports are easy to create. The unique painting facility allows users to draw the report layout directly on the screen. VISIMAGE PC provides all the functions of a powerful report writer, simply designed for the end user.



### PC/HP3000 Access

VISIMAGE PC includes a new communication package designed by Walker Richer and Quinn that allows you to access HP3000 data using any PC network. Users have access to IMAGE databases, KSAM, MPE and SD files. VISIMAGE comes complete with interfaces to OMNIDEX, DICTIONARY/3000 and POWERHOUSE dictionary. Sophisticated features allow the DP department to retain total control over security, confidentiality and system resource usage.

ABC...

### On-line Tutorial

VISIMAGE PC's ease of use is enhanced by a tutorial mode for novice users. Pop-up windows guide the users through each step. Very quickly you will become an expert at reporting and downloading data.



### Downloading

Your HP3000 data can be automatically downloaded to the PC. All the major PC formats are supported, making your data available to spreadsheets, word processing and other productivity tools (e.g. LOTUS 1-2-3, DBASE III, etc.).



### Windows

VISIMAGE PC combines the power of VISIMAGE with the flexibility of a window environment. Pull-down menus and pop-up windows give the user easy access to timely information. Use the mouse to design the layout of your report or "click" the items you want to select. VISIMAGE PC runs on all IBM compatibles, using MS-DOS or OS/2, with a basic configuration.

VISIMAGE PC puts all the pieces together giving users a complete solution. Call today for a demo diskette to learn how VISIMAGE PC can benefit you and your company.

**VITAL**  
*Soft*  
A COGEOLOG COMPANY

Outside California Only, Call

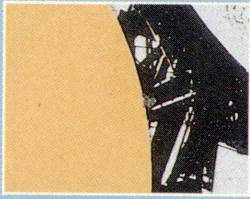
**1-800-VITALSOFT**

1916 Old Middlefield Way, Suite E,  
Mountain View, CA 94043 (415) 965-4494

LOTUS 1-2-3 is a trademark of Lotus Development Corp.  
DBASE III is a trademark of Ashton-Tate  
POWERHOUSE is a trademark of COGNOS  
OMNIDEX is a trademark of DISC  
VISIMAGE is a trademark of COGEOLOG

**CIRCLE 186 ON READER CARD**





## HP-UX

Andy Feibus

# The Bourne Shell

An HP-UX shell is the environment in which you execute commands to perform some action. Three shells are provided with HP-UX: Bourne shell, C shell and Korn shell. Each has its own characteristics. This month, I'll discuss the important aspects of the Bourne shell environment and show how to create shell programs to perform repetitious work.

All HP-UX shells are documented in *HP-UX Concepts and Tutorials: Shells and Miscellaneous Tools*.

All shells maintain certain environmental information in "shell variables." To view these variables, use the command **set**. A few important shell variables are:

**TERM** — the type of terminal you're using. Many HP-UX programs use this variable to determine how to control the screen. This variable must be set properly for certain programs (e.g., **vi**) to operate.

**HOME** — the directory in which you begin operating when you log in. Certain HP-UX commands expect configuration files to be stored in this directory. This variable is automatically set when you log in.

**PATH** — the list of directories searched when you request a program (e.g., **rm**) to be executed. If the program is located in a directory not specified in your **PATH** list, the program won't be found (unless the program's complete directory path is specified; e.g., **/bin/rm**).

The following example demonstrates how to set these variables:

```
$ TERM=hp2392
$ PATH=$PATH:/usr/local/
  bin:/usr/lib:/etc
$ export TERM PATH
```

The first command sets the type of terminal to "hp2392" (if your terminal is an HP 700 series or an HP 293x series

terminal, this is the best value for this variable).

The second command sets the search path variable to include the directories **/usr/local/bin**, **/usr/lib** and **/etc** in any command searches. This example also shows how to reference shell variables in commands; i.e., by using the **\$** before the variable name.

The third command is required to permit subsequent commands to obtain the values you establish for these shell variables. In other words, without this command, any shell variables you set are local to the current shell and aren't inherited by any subsequent shells.

The following session demonstrates this point (the importance of this concept, however, will be shown later). The computer's responses are italicized:

```
$ TERM=hp2392
$ export TERM
$ /bin/sh
$ echo $TERM
hp2392
$ TERM=2622
$ echo $TERM
2622
$ /bin/sh
$ echo $TERM
hp2392
$ exit
$ exit
```

The result from the first **echo** command is the value for **TERM** inherited from the first shell (because of the **export** command). The result from the second **echo** is the value for **TERM** that has been set for that shell. The result from the third **echo** is the value inherited from the first shell (and not the second, because the second shell didn't **export** this value).

To view all inherited values, use the command **env**. To view all values local to the current shell (those not **exported**), use the **set** command.

The **exit** command terminates the last Bourne shell entered. Two **exit** commands were required because two additional shells were started. When **exit**

is used in the log-in shell, you are logged out.

When you log into your system account, the Bourne shell automatically attempts to execute the shell scripts **/etc/profile** and **\$HOME/.profile**. Shell scripts (or shell programs) are files that contain a series of shell commands to execute. These files can be created with any text editor; e.g., **vi**.

The script **/etc/profile** contains commands that your system administrator wants all Bourne shell users to execute at log-in time. This command file usually assigns the **TERM** variable, a useful **PATH** and any other system settings.

The script in **\$HOME/.profile** (in other words, the file **.profile** in your **HOME** directory) contains user-specific commands to execute each time a Bourne shell is created for you. These commands can be used to establish any user-specific **PATH** locations, automatically execute any applications or reconfigure your shell environment.

When you log in, the Bourne shell executes the commands in **/etc/profile** first. Once this script finishes (assuming the **logout** command isn't contained in the script), the shell executes the commands in **\$HOME/.profile**.

Some commands to place into your **.profile** file are: **stty** (set your terminal line characteristics) and **mail** (read any electronic mail). Both of these commands are documented in Section 1 of the *HP-UX Reference Manual*.

To complete the explanation of **export** (and to show how to create and execute a shell script), create a file (name it "prog1") containing the following line:

```
echo "$FILE"
```

Execute the following commands (the computer's responses are shown in



italics):

```
$ ./prog1
$ FILE='Hello'
$ ./prog1

$ export FILE
$ ./prog1
Hello
$
```

Why didn't the computer display the value of **FILE** until it was **exported**? When a Bourne shell script is executed, a Bourne shell automatically is started to execute the script (even if your current shell is a Bourne shell); the new shell only inherits values that previously were **exported**.

When you executed **prog1**, you may have received the message:

```
prog1: cannot execute
```

This message indicates that the shell program's file is restricted from being executed. To remove these restrictions, use the **chmod** command (which is documented in Section 1 of the *HP-UX Reference Manual*).

I'll close this month with an example of a shell script I often use. I work with a product containing 500,000 lines of FORTRAN code that are stored in over 2,000 files and about 40 directories. Sometimes I need to find all uses of a particular subroutine (for example, when changing the arguments for the subroutine "subname"). Without using a shell program, I could use the command:

```
$ grep -i subname find /
source -name '*.f' -print
```

However, **grep** can't handle that many input files. So, a shell script is needed to find all source files and pass them to **grep** in small groups. This script follows (create it and store in the file **prog2**):

```
DIRS= find /source -type d -print
for dir in $DIRS
do
  if [ -d $dir ]
  then
    cd $dir
    FILES=*.f
    if [ -n "$FILES" ]
```

```
then
  MFILE=`grep -i subname $FILES`
  if [ -n "$MFILE" ]
  then
    echo $dir ...
    echo "$MFILE"
  fi
fi
done
```

For each directory in the **/source** directory, all FORTRAN files (those with a suffix of **.f**) are located. The list of these files is stored in the shell variable **FILES**. Then **grep** is used to determine if there are any references to "subname". All references are stored in the shell variable **MFILE**. If **MFILE** is blank (no references found), then nothing is output and the script proceeds to the next directory; otherwise, **MFILE** is displayed.

A better understanding of the script might be gained by placing the following command (which causes the script to display the result of each command executed) as the first line in the script:

```
set -x
```

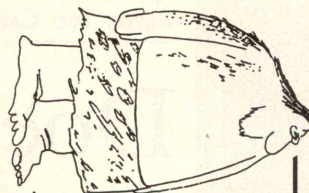
The square brackets ( **[]** ) indicate the test command (documented in Section 1 of the *HP-UX Reference Manual*). The **for** statement causes a loop to occur for each directory stored in the shell variable **DIRS**. All valid output from this script is written to **stdout** (if the output isn't redirected, this is your terminal).

To make this script more general-purpose, substitute "subname" with **\$1**. In shell scripts, **\$n** references the **n**'th argument on the command line when the script is executed. Once this substitution is made, execute the script as follows:

```
$ prog2 subname
```

Next time I'll cover how to configure and use the C shell to save you time. —*Andy Feibus is a software engineer for Bradley Ward Inc., Atlanta, GA.*

Would you like to continue to see articles on this topic?  
Circle on reader card  
yes 344 no 343



THE HARDWARE PLACEMENT NETWORK

LINX, INC. SUITE 311 2604 ELMWOOD AVE. ROCHESTER, NY 14618

Linx is Saving Companies like yours  
more than they have saved since the  
year one B.C. (Before Computers)  
On Hardware Purchases & Sales



800-553-8727

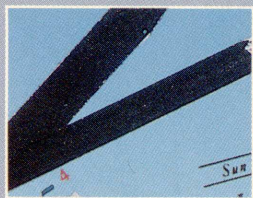
For the best savings  
Since the Dawn of Time  
Call

# MISSING LINX

(missing linx)n. Those Buying & Selling Hardware The Old Way!

CIRCLE 163 ON READER CARD





## SECURITY

Jeffrey Caldwell

### Steps You Can Take To Improve Security

# Does Your Security System Measure Up?

As greater amounts of data continue to be processed

on more complex computer networks with increasingly sophisticated communication equipment, management needs to be concerned with the security environment more than ever.

Gone are the days of a small mini-computer with a handful of users simply processing checks or general ledger information. Today's computers must be able to handle just-in-time (JIT) inventory calculations, talk to other computers through electronic data interchange (EDI), or provide access to a local area network of personal computers.

These and other features make the security issue even more important to corporate executives and information system managers. The question of how to measure your current security environment is sometimes a difficult one to answer.

A SECURITY SYSTEM is made up of many different components and layers of controls. These layers of controls act much like a brick wall around the data. If a few bricks are missing or if there are small gaps, then there is some risk of a security breach. If the wall of security is small or has been neglected, the risk of someone manipulating or destroying data and programs becomes greater.

The first step in measuring your current level of security is to gain an overview of your security system.

Some of these controls can be called access controls, such as user passwords, account and group passwords, or file

lockwords. Capabilities assigned through the use of the MPE operating system also help to limit access once a user has signed onto the system. Physical security, such as locked computer rooms also can help limit unauthorized access to valuable data.

Policies and procedures over the implementation and maintenance of computer programs and production data are also part of a good security system. The ability to change programs should be limited and authorized through the use of change-request forms. These forms should contain places for a user to describe the request, blanks for approvals from the head of the user department and the data processing manager, sign-offs for testing and space for implementation information.

Also, operational controls should include job schedules, review of processing logs, security over utility and system software and limited access to source code by operators.

One other area of security is application software that provides functional security limiting users once they have signed onto the system. It provides safeguards over incompatible duties, such as letting an accounts-payable clerk retrieve accounts-receivable data.

All of these different checks, controls, policies, procedures and review points help to form a good wall of security.

THE NEXT STEP is to create a review plan. Once you understand the various levels of security, you should be able to make a list of all of the controls that are in place.

In addition, as you're reviewing controls, try to come up with a list of controls that are completely lacking. Many times you're so busy with day-

to-day tasks that obvious control procedures have never been thought of or implemented.

From your list of current controls you need to identify and perform some key tests for each control. The tests should be designed to show if the control is functioning as designed, and if it is providing the required level of comfort over the associated risk.

For maintenance controls, you could review some of the change-request forms from completed projects. Were the proper signatures present? Does it appear that the users signed off on the form in a timely manner? Is there a system established to track the progress of the changes?

Tests concerning password controls could include signing on to the system with SM capability and reviewing the user passwords. Other tests might include talking to various users to see how often they really change their passwords. You also should see if security software such as VeSoft's Security 3000 has been installed to supplement the MPE security system, or if security monitoring software such as InCase's Engarde product

#### **Security 3000**

VeSoft  
1135 South Beverly Dr.  
Los Angeles, CA 90035  
CIRCLE 284 ON READER CARD

#### **Engarde**

InCase  
2055 Woodside Rd.  
Suite 171  
Redwood City, CA 94061  
CIRCLE 283 ON READER CARD



is being used to help report on the level of security.

Application software security should be checked to see if unique passwords are assigned to each employee, or if multiple employees with the same duties share the same passwords. Password sharing leads to everyone in the department, or even the

company, having access to protected data. The use of common passwords also makes it more difficult to trace transactions back to specific users.

System utilities and software should be checked to see who has the ability to use or modify them. If there isn't limited access to utilities, they can be modified to grant users higher capabilities that can

lead to a deterioration in the security wall.

Tests in the operation area could include making sure operators don't have access to the source code or don't have the ability to change production data. Another test would be to review previous days' process logs or schedules to make sure all jobs were properly authorized and run in the proper order, and any problems that occurred were handled correctly.

Once you've gained an understanding of the security environment, identified current and lacking controls, and tested the current controls, the last step is to evaluate your findings.

Where controls were missing, a decision needs to be made concerning the cost and benefit associated with implementation. Where controls previously had been designed and put into place, but weren't being adhered to, the control should be reviewed for its suitability and either be changed or re-emphasized by management.

Now that you better understand some of the tasks that are involved in completely measuring your level of security, take the quick security test in the Table. It consists of yes/no security questions and might give you an idea of how soon you should begin your full security measurement project.

FINALLY, REVIEW YOUR INTERNAL resource personnel and, if they don't have the expertise or time to do the job, hire a professional to help. If you go that route, be sure to structure the tasks so that there is a transfer of knowledge from the professional to your staff in order to increase your company's security expertise. —Jeffrey Caldwell is an information technology manager specializing in computer security and control for Coopers and Lybrand, Los Angeles, CA.

Would you like to continue to see articles on this topic?  
Circle on reader card  
yes 346 no 345

## TABLE.

### QUICK TEST OF SECURITY

INSTRUCTION: Place a check mark in either the yes or no column for each question. Count the number of yes answers and compare it to the rating at the bottom.

QUESTION	YES	NO
<b>PROGRAM MAINTENANCE</b>		
1. DO YOU USE FORMAL PROGRAM REQUEST FORMS ?	___	___
2. DO YOU LIMIT ACCESS TO PRODUCTION PROGRAMS ?	___	___
3. ARE THERE CONTROLS OVER UNAUTHORIZED CODE BEING ENTERED AS PROGRAM CHANGES ARE MADE ?	___	___
4. ARE USERS INVOLVED IN THE TESTING PROCESS ?	___	___
5. ARE PROGRAMMERS RESTRICTED FROM PRODUCTION DATA ?	___	___
<b>ACCESS SECURITY</b>		
1. ARE PASSWORDS CHANGED PERIODICALLY ?	___	___
2. DO ALL USERS HAVE UNIQUE PASSWORDS ?	___	___
3. ARE PASSWORDS GREATER THAN SIX DIGITS ?	___	___
4. ARE PASSWORDS ALPHANUMERIC ?	___	___
5. IS THERE ONLY ONE USER WITH SYSTEM MANAGER (SM) CAPABILITIES ?	___	___
<b>OPERATION CONTROLS</b>		
1. ARE OPERATORS DENIED ACCESS TO PROGRAM SOURCE CODE ?	___	___
2. ARE OPERATORS PREVENTED FROM CHANGING PRODUCTION DATA ?	___	___
3. DOES OPERATIONS MANAGEMENT REVIEW PROCESSING LOGS ?	___	___
4. IS THE USE OF SYSTEM UTILITIES LIMITED AND REVIEWED ?	___	___
5. ARE ALL PROBLEMS WITH JOBS REPORTED TO THE PROPER LEVEL IN A TIMELY MANNER?	___	___
<b>MISCELLANEOUS</b>		
1. IS THE COMPUTER ROOM LOCKED AT ALL TIMES ?	___	___
2. ARE TERMINALS LOCATED IN SECURE PLACES ?	___	___
3. IS THERE PROTECTION OVER OUTSIDERS ACCESSING THE SYSTEM USING MODEMS ?	___	___
4. HAS A FORMAL SECURITY POLICY BE ISSUED AND SIGNED BY EACH EMPLOYEE ?	___	___
5. DOES MANAGEMENT PERIODICALLY REVIEW THE SECURITY PRACTICES ?	___	___
TOTAL CORRECT ___ SECURITY RATING: 16-20, GOOD; 10-15, KEEP TRYING; BELOW 10, WATCH OUT!		





## PC TIPS

Miles B. Kehoe

When writing programs for use by others, one of your concerns is often the speed of execution your user sees on the screen. When your application is written for the Vectra, how your application writes to the screen can have a considerable effect on the perceived performance of your software.

There are several methods you can choose to output text on the screen, and the default is often the language output statement.

Consider the C statement:

```
printf("this prints on the screen");
```

If you include this line in your source code, the compiler will generate a call to the MS-DOS "standard output" function call. Through the magic of MS-DOS, this call will get the string printed on the standard output device, typically the Vectra screen. Along the way, any escape characters may be processed by the ANSI.SYS device driver and may be redirected by the user to a file or other device.

By using the language-specific call, you ensure compatibility with non-MS-DOS operating environments, but you lose the performance you could have.

In the process of executing the output call, MS-DOS eventually may call the ROM BIOS to perform the actual screen output.

If you're willing to give up the I/O redirection feature of MS-DOS and assume the output will go only to the screen, you can bypass MS-DOS and pass the string to the ROM BIOS on your own, speeding your display accordingly.

One call available through the ROM

BIOS allows you to display a string of characters on the screen. However, this function is available only in AT-class machines, so I use a different function. Because it only outputs a single character at a time and doesn't advance the cursor position automatically, it requires a bit more overhead.

Nonetheless, my application is done on every PC so the extra overhead is worth the effort.

*Program 1* shows a prototype C procedure in Turbo C 2.0 to output directly through the Vectra ROM BIOS. The routine will position the cursor before each character, so I have to specify the

line number each time I call the procedure.

By using this ROM BIOS calling sequence, you make your screen display much more quickly and speed the execution of your program.

### Writing To Display Memory

While using ROM BIOS calls is much faster than using standard output, there is an even faster method of sending text to the screen. By treating the display as an array of memory mapped locations, you can write to the screen at memory speed and maximize your output.

To do so, you need to understand

## A

### Program 1. VECTRA.DOC

Display String using ROM BIOS Calls

```
#include <dos.h>
union REGS regs;

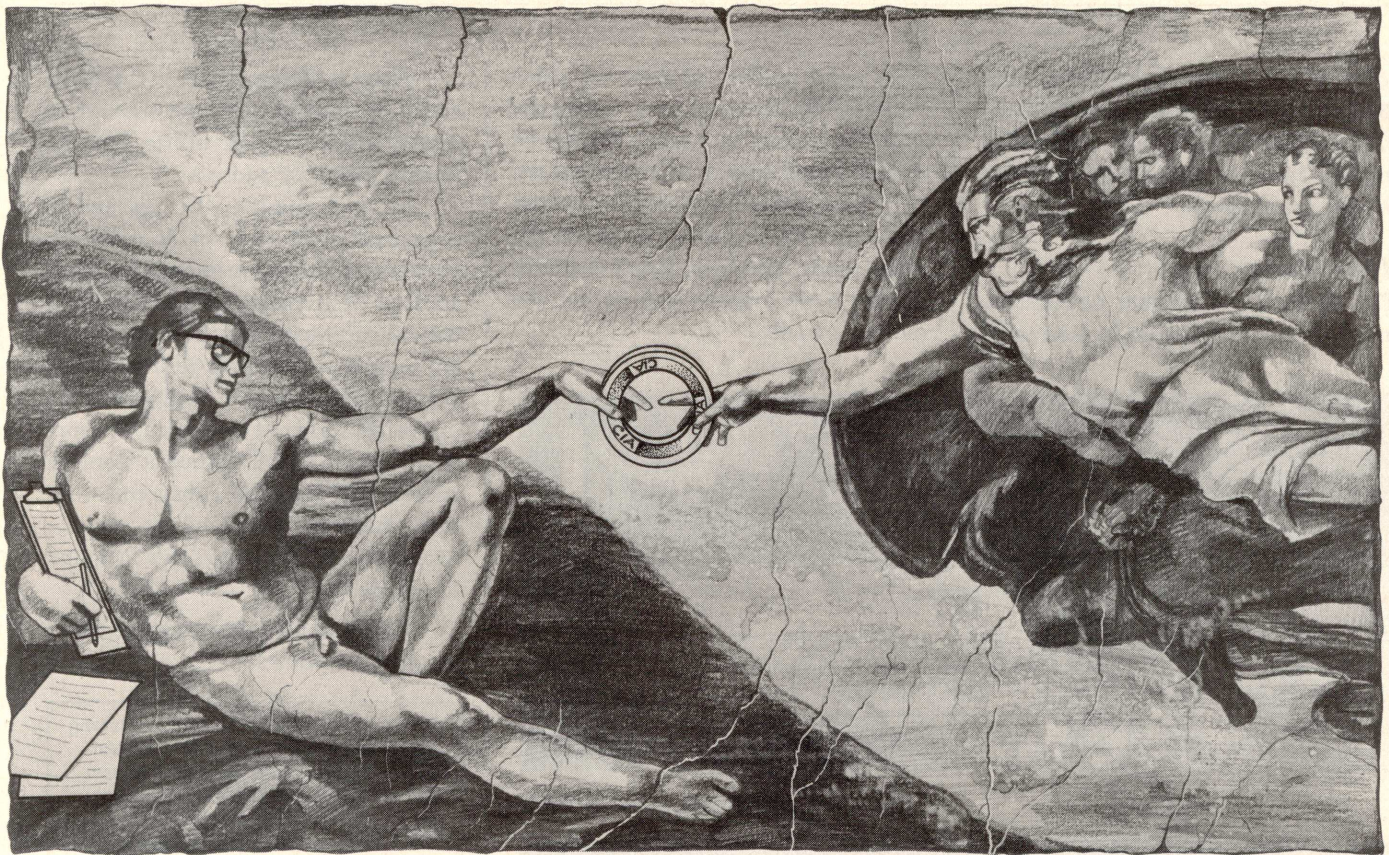
/* calling sequence: writebios(line,string); */
void writebios(line_no, buf)
int line_no;
char *buf;
{
    int col = 0;

    while(*buf != '\0') /* C strings terminate with null
byte */
    {
        regs.h.ah = 2; /* Position cursor
        regs.h.bh = 0;
        regs.h.dh = line_no;
        regs.h.dl = col++;
        int86(0x10, &regs, &regs);

        regs.h.ah = 0x09; /* Write character w/
Attribute */
        regs.h.al = *buf++; /* Character address */
        regs.h.bh = 0; /* Video Page Number */
        regs.h.bl = 15; /* Bright white attribute
*/
        regs.x.cx = 1; /* Number of repeats */
        int86(0x10, &regs, &regs);
    }
}
```

*Display screens using ROM BIOS calls*





# *At last... System Performance like a gift from God.*

CIA, which stands for CPU I/O Analyser, is the ultimate control over System Performance on an HP3000.

Try CIA and you'll agree that its simplicity and powers of revelation feel divine indeed.

Write, telephone or fax us for complete information including a demo tape and manual.

In the South Pacific region, contact:

Facer Information Design



SIMPLY EXPOSES SECRETS.

Post Office Box 270, Epping, NSW 2121, Australia.

Telephone +61 2 484 3979. Facsimile +61 2 484 5709.

In the USA, contact:

Tres Associates

Post Office Box 9802-231, Austin, Texas 78766.

Telephone 512 346 0904. Facsimile 512 459 9588.

See us at SCRUG, Booth #88

CIRCLE 154 ON READER CARD

FM&A/LF5



some of the basics of the Vectra (and IBM) video display. It isn't overly complex, and a little time spent understanding the basics can offer much faster overall performance.

## Video Modes

The Vectra has a number of different monitors and interface cards. Internally,

there are a number of different video "modes." By selecting from among the different modes, you select the screen resolution and number of colors you see.

Using **printf** or ROM BIOS output functions don't require you to set the video mode. However, direct writes to display RAM require you to set the mode manually.

Figure 1 shows some of the more common video modes, the amount of display memory they utilize and the starting memory address.

In text modes, the display is organized as 25 rows of 80 columns. However, in display memory, characters are located at even byte addresses and the enhancements for those characters are located at odd byte addresses. For example, the character displayed at the upper left corner of the screen, at coordinate (0,0), is actually stored at memory address B800:0000. The enhancement for that character is stored at address B800:0001. Figure 2 shows this in action for mode 2.

The attribute byte contains a value encoded as follows:

Bit 7	Foreground	Character Blinking
Bit 6	Background	Red Component
Bit 5	Background	Blue Component
Bit 4	Background	Green Component
Bit 3	Foreground	Intensity
Bit 2	Foreground	Red Component
Bit 1	Foreground	Blue Component
Bit 0	Foreground	Green Component

To create a high-intensity white character on a black background, the attribute byte must have bits 0, 1, 2 and 3 "on," and all other bits "off."

This means the attribute byte will have the value of hex or 15 decimal.

To produce a yellow character on a blue background, bits 0, 1 and 5 will be set to one or "on" yielding a value of 23 hex or 35 decimal. Not all combinations are available on all monitors (for example, true monochrome monitors underline instead of blink), so experiment with the monitors you expect to support for your application.

In summary, to write the letter "A" in high intensity white on black at screen location (0,0) (the upper left-hand corner of the display), you store the value 65 decimal at address B800:0000; and an attribute value of 15 decimal at address B800:0001.

To implement a procedure similar to "writebios" with direct memory

## FIGURE 1

Common Memory Modes

Mode	Type	Display Memory	Segment Address	Comments
4	TEXT	4K	B800	16 color 25 x 80 CGA/EGA/VGA
6	GRAPH	16K	B800	2 color 640x200 CGA Graphics
7	TEXT	4K	B000	2 color 25 x 80 Monochrome/EGA/VGA
16	GRAPH	32K	A000	64 color 640x350 EGA/VGA

Common memory modes

## FIGURE 2

Text Display Memory Map

B800:0000	Character at Row 0, Column 0
B800:0001	Attribute for character (0,0)
B800:0002	Character at Row 0, Column 1
B800:0003	Attribute for character (0,1)
...	
B800:0050	Character at Row 1, Column 0
B800:0051	Attribute for character (1,0)
B800:0052	Character at Row 1, Column 1
B800:0053	Attribute for character (1,1)
...	

Text display memory map

## TABLE 1

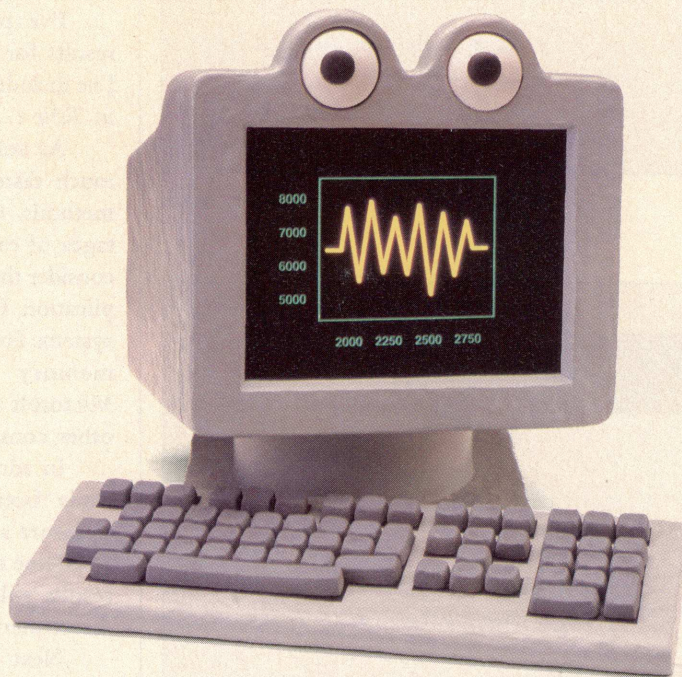
Comparison of Screen Methods

Method Used	Characters per second	Seconds to fill screen
printf	996	2.01
ROM BIOS	1385	1.44
Memory Writes	52380	.04

Comparison of screen methods



# User Friendly.



Take advantage of our friendliness. Accountants, controllers, human resource executives and chief financial officers across the nation do. Of course, Collier-Jackson systems are comprehensive, full-featured. Written and designed specifically for Classic and HP Precision Architecture. Not to mention flexible and integrated. But, that's all transparent to our users. Simple. Straight-forward. Easy to Use. Put them at the top of your list. They're at the top of ours.



HP 3000  
NATIONAL  
PROGRAM

CJ/ADVANCED GENERAL LEDGER™  
CJ/ACCOUNTS PAYABLE™

CJ/ACCOUNTS RECEIVABLE™  
CJ/FIXED ASSETS™

CJ/PURCHASING™  
CJ/PAYROLL™

CJ/PERSONNEL™  
CJ/EMPLOYEE FUND  
ADMINISTRATION™

CJ/REPORT WRITER™  
CJ/EXECULINK™

Collier-Jackson, Inc./3707 West Cherry Street/Tampa, FL 33607/(813)872-9990

CIRCLE 164 ON READER CARD



## Program 2.

Display String using Direct Memory Write

```
#include <string.h>

/* calling sequence: writeram(line, attribute, string); */
void writeram(line_no, attr, buf)
unsigned int line_no;
unsigned char attr;
char *buf;
{
    char far *mem_loc;
    int i,
        len;

    len = strlen(buf);

    /* Calculate the address of start of line */
    mem_loc = 0xb8000000+(line_no * 160);

    for(i=0; i<len ; i++)
    {
        *mem_loc = buf[i];      /* move character to memory
*/
        *(mem_loc+1) = attr;    /* move attribute to next
loc */
        mem_loc += 2;          /* and increment mem pointer
*/
    }
}
```

*Display string using direct memory write*

## Program 3.

Setting Screen Mode

```
int setmode(mode)
int mode;
{
    int save_mode;

    regs.h.ah = 0x0f;          /* read current screen mode
*/
    int86(0x10, &regs, &regs);
    save_mode = regs.h.al;      /* and save it */

    regs.h.ah = 0x00;          /* Set new video mode */
    regs.h.al = mode;
    int86(0x10, &regs, &regs);

    return(save_mode);         /* and return previous mode
*/
}
```

*Setting screen mode*

access, we need to use some C pointers and a loop.

In *Program 2*, I've added a parameter to the calling sequence — the attribute to be used for all characters of the string.

When you write directly to display memory, there's more setup required as well. As I mentioned earlier, you will need to set the video mode you wish to use.

### Setting The Video Mode

The procedure I use to set screen mode also returns the current screen mode, so when I'm done, I can restore the original mode.

Note that a call to change screen modes will clear the screen even if the mode doesn't change: Some people use this as a way to erase display memory. (Actually, I've found that changing screen modes produces a "bounce" on a number of monitors, so I don't use this method of clearing the screen.) *Program 3* contains the listing.

I've provided some 'benchmark' results for each of these methods, and I've included a summary of my findings in *Table 1*.

As you can see, display writes are much faster than either of the other methods. Of course, there are advantages of each method and you should consider them all when you write an application. Portability to other operating systems favors **printf**, and speed favors memory writes. If you're using Microsoft and HP Windows, you'll have other considerations.

In addition, you may want to include "bounds checks" in your routines to insure a calling routine doesn't pass a bad line number or video mode. Your results still will be much better with direct memory access.

Next time, we'll look at several ways to handle the screen as a graphics device and add to your applications. —*Miles B. Kehoe is a technical product manager for Hewlett-Packard, Cupertino, California.*

---

Would you like to continue to see articles on this topic?  
Circle on reader card  
yes 340 no 339



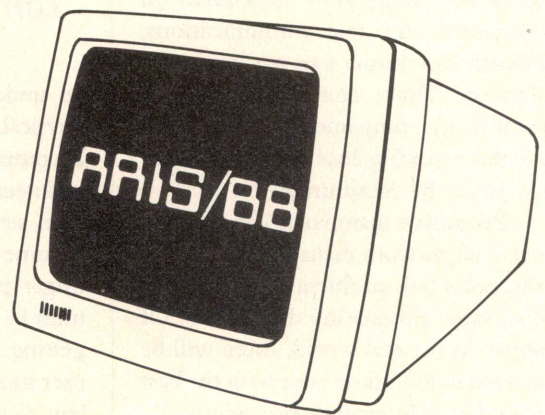
**ARIS/BB**  
(Automated Reader Information Service)

**Announcing**

# **HP Professional's On-line Bulletin Board**

**Dial in to HP Professional's on-line bulletin board and . . .**

- Find out more about the products you need
  - Get help with your computing problems
  - Send messages to the editors
  - Submit a change of address
  - Order books and back issues
  - Check the guidelines for submitting articles
  - See the editorial calendar for the year
  - "Talk" to other users
  - Download programs from HP Professional
- ... And more!*



## **GET ON-LINE - IT'S FREE!**

The bulletin board is a direct line to editors and your colleagues in the HP market. To get on-line you need a PC or a terminal with a modem and your mailing label from HP Professional magazine. There's no charge to log on.

## **Be An Active User**

The ideas and experiences you share are valuable to other subscribers. Each month the most interesting bulletin board exchanges will be published in a regular column in HP Professional.

## **Here's How . . .**

1. Set your PC to seven data bits, one stop bit and space parity, or eight data bits, one stop bit and no parity (300, 1200, 2400 baud available).
2. You may dial in through any one of the following centers:
  - East Coast - Dial (215) 542-9458.**
  - Southwest - Dial (818) 577-9100.**
  - Northwest - Dial (415) 873-2135.**
3. You'll be asked for your name and subscriber number (the number is on your HP Professional mailing label).

## **Dial in today!**

*Any questions or problems getting on-line,  
call Anne Schrauger at (215) 542-7008.*

**HP**Professional





## FIELD SERVICE

Ron Levine

# Testing The Network

Maintaining near 100 percent uptime on today's critical

data communications and local area networks (LANs) has become mandatory for many users. With business and industry becoming more dependent on computers and telecommunications, network downtime can no longer be tolerated. When computer links are down many companies grind to a halt and the resulting loss in productivity may never be recaptured.

**Proactive** maintenance is the ideal goal of all network managers (i.e., detecting potential problems before they occur, thus eliminating downtime). Of course, in the real world, there will be occasional downtime even with the best predictive maintenance procedures.

Your second option is to implement a well thought out **reactive** maintenance program. This should focus on troubleshooting procedures that hold downtime, along with user dissatisfaction, to a minimum.

Troubleshooting the network involves looking at the interfaces over which computers, terminals and remote peripherals talk to each other. The technician, or sometimes the operator must determine if a network problem is located at the source from which the information is carried, the channel over which the information is transmitted, the receiving hardware, or other system fault or operator error.

The network troubleshooting task is complicated by the common use of multivendor equipment. To identify the fault and resolve the problem often means that a variety of protocols must

U *Using the right test tools are essential to maintain efficient data communications and local area networks.*

be understood and tested across the physical, data link and network layers of a communications system. If system maintenance is handled by multiple outside service providers, the task can become additionally cumbersome since finger pointing between vendors also must be eliminated. In order to expedite getting the network back on-line, the user must deal with isolating the problem to a specific vendor's equipment.

Using the right test tools are essential to maintain efficient data communications and local area networks. These tools should provide network performance information by observing actual network traffic (monitoring) or by actively testing the communications system.

### Communications Test Tools

Field service troubleshooting of data communications and LANs is best handled by three types of portable test devices. These tools monitor the activity over the lines, provide specific test data for transmission, and/or analyze all network activity. The three most common devices used for these purposes are the breakout box, the data line monitor and the protocol analyzer.

A breakout box monitors the individual pins of a communications interface in order to detect the presence or absence of activity (it indicates whether a specific pin or line is being used). This

helps the user determine if the transmission on a specified pin has reached its destination. It's ideal for cable checking or during new installations. Before installing a system, the breakout box can simulate the finished wiring (you can "rewire" the cable by opening leads with the switches and jumpers on the box.) This can be done until the wiring format that allows the devices to communicate with each other is found.

There are many different types of breakout boxes. There are basic models that provide bare-bones monitoring and testing of data transmission over an interface, to sophisticated models with many built-in troubleshooting aids. However, all breakout boxes only detect for line activity. These monitoring tools don't test the active signal for errors, determine if the transmitted data is correctly received, or monitor for "garbage" on the line. The boxes can't perform such tasks as store, send, receive, check or interpret data. Breakout boxes don't test baud rates, perform line testing, check protocols, or measure voltages; they simply monitor the individual leads (pins) of a communications interface for activity.

Sometimes the limited monitoring ability of the breakout box is not enough. A Data Line Monitor is needed when the data itself must be checked for errors, the communications lines moni-



tored for throughput and noise, or it becomes necessary to actually capture bytes (to "read" the data) in its transmitted formats.

The monitor picks up where a breakout box leaves off. I define it as a sort of logic analyzer for data communications. You can use the monitor to observe the flow of transmitted and received data, hold data bytes and store them for future reference, display the data in various formats and perform bit error rate testing (BERT).

When more in-depth, total network performance analysis is required, such as determining the quality and congestion of a link or monitoring frame sizes and data packets, a Protocol Analyzer can be used.

Hewlett-Packard makes a number of these test devices for both monitoring and LAN/WAN testing.

HP's 4951C and 4952A are portable

WAN protocol analyzers suitable for field use. They have all of the capabilities of the breakout box and the data line monitor plus they can provide higher level flexible monitoring of all major protocols and data codes on all common network interfaces. The HP 4972A provides LAN protocol analysis at the field level.

### **A Basic Network Troubleshooting Guide**

From various HP documents, I've put together the following basic communications network troubleshooting guidelines. These tips will help you to rapidly isolate a network problem and return the system to full operational status.

Familiarity with your network's normal operating "fingerprint" is essential for quick resolution of future problems. By capturing data when your network is working properly, you are

aware of normal operating characteristics. These characteristics can be used for comparison purposes when problems arise, enabling you to spot a malfunction and to isolate the fault to a specific network component.

By collecting measurements at key points around your network under normal operating conditions and archiving the results, the data can be used later for future reference during troubleshooting. It's important to note that every network's performance level is different because of the different devices connected, node usage and user's work habits. By making a series of performance measurements (e.g., type of traffic carried, node use patterns, cyclic activity during heavy and light loads, bandwidth usage, line utilization, data transmission quality) and interpreting the results, you'll understand your network's characteristics. This often will

## **Webster's defines form as ...**

**"to think of; frame in the mind; conceive ... create out of separate elements ... assume shape."**

## **Indigo Software defines JetForm as ...**

**"doing all of the above creatively, efficiently and inexpensively."**

***What can you expect from the most powerful, flexible competitively-priced electronic forms product on the market?***

- **Power:** to take full advantage of PC interactive graphics design capabilities and the latest in laser printing technology.
- **Flexibility:** to create electronic forms that meet all your forms requirements — from single-page expense claims to multi-page insurance policies.
- **Design:** to watch your form as it takes shape and use a host of built-in design features.
- **Speed:** to cut your forms design and print time to a fraction, with no compromise to the end product.



### ***Is What You See Really What You Get?***

With **JetForm**, yes! **JetForm** makes the creation process easy. As your form takes shape on the screen, you know it will look the same when it comes out of your laser printer.



Call (800) 267-9976 (613) 594-3026

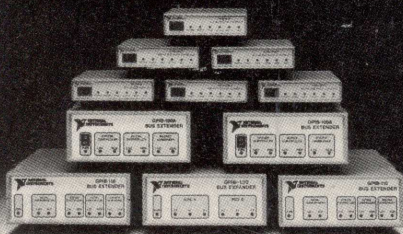
Indigo Software Ltd.  
560 Rochester Street,  
Ottawa, Canada K1S 5K2

**JetForm** solutions are available for:  
IBM PC/AT, PS/2 and compatibles  
HP 3000, HP 9000,  
DEC VAX

CIRCLE 119 ON READER CARD



# IEEE-488...



## Converters and Controllers for RS-232, RS-422, Parallel, and SCSI

- Built-in 64K byte or 256K byte RAM buffer to spool data
- Controllers have onboard, programmable operating systems for standalone applications
- Switch selectable interface parameters
- Built-in DMA controller supports high speed transfers on the GPIB port (up to 900K bytes/sec)
- All-metal MicroGPIB™ case and connectors form a high impact shielded enclosure that minimizes EMI

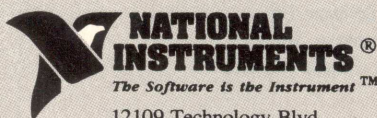
## Data Buffer

- 900K bytes/sec transfer rates
- 1M bytes of RAM

## Extenders/Expander

- High performance parallel bus extender
  - Supports 28 devices at 300 m
  - 222K bytes/sec transfer rates
- Serial bus extender
  - Fiber optic or coaxial cabling
  - 144K bytes/sec transfer rates
- Bus expander
  - Optically isolates 2 GPIB buses
  - Extends GPIB by interfacing up to 14 more devices
  - Doubles the GPIB 20 m cable limit
  - Transparent to user software

- FREE Customer support
- 30-day money back guarantee
- 2 year warranty



12109 Technology Blvd.  
Austin, Texas 78727-6204  
(512) 250-9119  
(800) 531-4742 U.S.  
(800) IEEE-488 in Texas

Japan 81 (03) 788-1921 • France (1) 48 65 33 70  
United Kingdom 44-01-549-3444 • West Germany 49 89 807 081  
Italy 39-2-98491071-2-3 • The Netherlands 31 070-996360

**Call for FREE catalog**

enable you to spot changes that can point to network degradation and potential troublespots before they become causes of network or node downtime. When downtime does occur,

**A**lways rule out operator error before assuming that the network is down.

this network performance database will aid in rapid remedial action.

Always rule out operator error before assuming that the network is down. In other words, verify that a problem really exists. Human errors, like improper use of the network or lack of correct operating knowledge, is a major cause of reported "problems."

Once human error has been ruled out, here are some guidelines to assist you in pinpointing the cause of the trouble.

■ A single user experiencing a problem most likely points to a communications line problem from his terminal to the host. Or, the fault may lie at the terminal itself, cable-to-cluster controller, controller connection or configuration, or system configuration at the host. If the problem is intermittent, it also may be caused by another user dominating the system.

■ Multiple users experiencing problems, on a single cluster controller, point to the line from that cluster to the host as being the most likely culprit. The cluster controller, modems, multidrop line, or system configuration on the host may be at fault. Again, a user on that cluster may also be hogging the system at certain times.

■ Many or all users experiencing data communications problems on a multidrop system point to the possibility of

overload of that multidrop system, modems, leased line or system configuration on the host.

■ Decide whether to use passive or active testing. Passive (non-intrusive) troubleshooting doesn't interfere with data traffic on the network. Traffic monitoring is used in an attempt to locate reported or suspected problems without affecting other users on the system or causing downtime. A test port must be available to which test equipment can be connected. Active testing (intrusive) removes that part of the network being tested from service while troubleshooting is in progress. This type of testing, while sometimes causing a hardship, usually provides better results.

■ Have the proper test tools available to isolate the fault in the quickest possible time.

## A Typical Troubleshooting Procedure

Network troubleshooting can be broken down into three layers of testing:

**Level 1** — the physical interface. This is the hardware that is used to physically connect and transmit the data.

**Level 2** — the data link level. Here, we mainly are concerned with the software that is responsible for moving data reliably across the physical link. In a LAN this is usually an Ethernet, IEEE 802.2 or Starlan package.

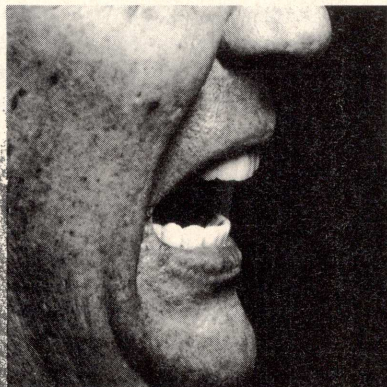
**Level 3** — the network level. This level is responsible for switching and routing information and for maintaining connections between systems.

Always check the physical interfaces first as they are the most common source of network problems (after user errors have been eliminated). A break in the physical connection, such as a downed phone line or loose cabling is at the root of many communications faults. The easiest method for checking a physical connection is to monitor the pins (leads) at both sides of the connection (e.g., at the entry and exit points of a MODEM, or at the sending pins of a host computer and the receiving pins of



# SAYS WHO?

CONFUSED BY THOSE FOLKS WHO ARE TRYING TO TELL YOU  
THAT ONLINE BACKUP UTILITIES DON'T WORK?



## SAYS THEM.

THEN LISTEN TO THE PEOPLE WHO CAN TELL YOU THAT IT DOES  
WORK — THE HUNDREDS OF COMPANIES WORLDWIDE WHO BACK  
UP THEIR DATA DURING NORMAL PRODUCTION HOURS WITH  
ONLINE-BACKUP/3000 FROM ORBiT SOFTWARE.

*"Hospitals can't afford an hour and a half  
of downtime. With ONLINE-BACKUP/3000,  
we shut down for only ten minutes a day,"*  
says Gary Trosin, Data Processing Manager  
of Ingleside Hospital.

*"We used to use BackPack™ . . . but  
ONLINE-BACKUP/3000 lets us do a full  
backup daily where before we only had time  
for a partial,"* enthuses Kay Shair-Ali,  
MIS Operations Supervisor of Marine  
Terminals Corporation.

And now, just released —  
ONLINE-BACKUP/3000 version 2.12! The  
newest version of ONLINE features zero  
down-time backup for IMAGE files plus  
true disk-to-disk backup for faster restores  
plus a variety of other new features.

Find out for yourself what all the talk  
is about. Call today for your free,  
no-risk demonstration package of  
ONLINE-BACKUP/3000.

CIRCLE 130 ON READER CARD

*online* **BACKUP**

# ORBiT

Software Support Throughout  
the HP Community

BackPack™ is a product of Tymlabs Corporation

ORBiT Software (USA) Inc., 319 Diablo Rd., Suite 218, Danville, CA 94526  
(800) 6-ONLINE, or (415) 837-4143, FAX (415) 837-5752

ORBiT Software  
GmbH (Berlin)

ORBiT Software  
(UK) Ltd

ORBiT Logiciels  
(France) Sarl

ORBiT Utilities  
(Benelux) N.V.

ORBiT Software  
(Scandinavia) AB



a target terminal), using a breakout box, data line monitor or protocol analyzer.

This is where the database you collected on system performance becomes a valuable asset. Compare the activity on the leads under test against their status when the network was working properly. If the current results match the fingerprint data previously gathered, the physical connections are probably good.

Next, check for indications of poor line quality. Two tipoffs are excessive bit errors during transmission and excessive rejects. Problems can be determined by using a data line monitor or protocol analyzer. Again, compare the present results against the fingerprint data.

If the preceding checks don't indicate any fault conditions, next look for possible configuration errors or bad clocks. This is easily done by employing a protocol analyzer. The testing, monitoring and decoding to accomplish this will depend on the type of level 2 environment being utilized (refer to the application document listing at end of this article for additional information).

If no error conditions have been located, but a network problem exists, you are ready to start the next level of troubleshooting. Two types of problems are possible here: system software faults, (which are very rare) and user related faults, like improper addressing and network congestion, or a busy signal on a phone line. Again, the exact testing pro-

cedures will depend on the type of environment in which you operate.

Usually, if no faults are isolated by the time you reached this point, either the problem was missed during troubleshooting or the problem is not network based. If you are convinced there is a network problem, the line should be taken down for active testing. This includes bit error rate testing (BERT), simulation testing, or network and subscriber emulation testing. Protocol analyzers are best utilized for these higher-level procedures.

In today's complex data processing-communications environment, keeping your network on-line requires the ability to manage a variety of computer equipment, understand possibly dozens of protocols and to maintain a working knowledge of your network's unique operating characteristics. Good preventive and predictive maintenance programs can alleviate many potential

problems before they cause users to lose precious processing time.

When a network does go down, time is of the essence to return to operational status. A good corrective maintenance program is essential to minimizing downtime. It doesn't start when the system fails, it must begin when the system is operating normally. Learning the ins and outs of the network, being aware of how it performs under normal operating conditions and having the proper troubleshooting tools (including a performance database) handy and ready to be put to use in an emergency keeps you in control of the network. This control ensures that a fault can be rapidly identified, isolated and resolved, resulting in a more controlled situation.

## [ REFERENCES ]

Hewlett-Packard publications:

1. Wide area network troubleshooting with protocol analyzers (5952-5130)
2. Local area networking protocol analysis solutions for the long run (5952-5112)
3. LAN performance Analysis Product Note (5952-5103)
4. Application note 424 (SNA networks) (5952-5131)
5. Application note 425 (X.25 networks) (5952-5132)

Would you like to continue to see articles on this topic?  
Circle on reader card  
yes 336 no 335

## INTRODUCING A HIGH PERFORMANCE MANAGEMENT TOOL THAT'S SIMPLY MAGIC

Introducing Magician by Appic. A powerful utility program, designed for the HP 3000, that lets you load up multiple applications at the same time and switch instantly among them. You no longer have to stop working in one application to access another.

Magician is simple to use. Just summon Magician with one keystroke and access the programs you need. Magician gives you the freedom to organize your work day.



A high performance tool, Magician can actually improve computer response time, providing greater convenience and efficiency for system users. You won't spend hours each day waiting for access to an environment needed to complete a job. Like magic, you can work quickly, efficiently.

And now, for a limited time, Magician is offered for a **Special Introductory Price**. So call us today. 512/346-0962.

APPIC, Inc. 3600 North Hills Dr., Suite 131 Austin, Texas 78731





# HICOMP-SOFTWARE IS SAVEWARE

Leppin Werbeagentur • Hamburg



**Hewlett-Packard recently acquired the worldwide rights, with unrestricted usage for their own company, to two advanced tools, HIBACK and DBTUNE from HI-COMP.**

This partnership provided sufficient reason for Klaus Stamer, General Manager of Hewlett-Packard in North Germany (photo right) to personally present Uwe Hinrichs of HI-COMP Hinrichs GmbH with a special certificate.



Confirming the contract (February 1989)

HIBACK and DBTUNE from HI-COMP. Developed to let you access and save all data files on an HP3000. The Hewlett-Packard people set the challenge and were delighted with the results.

**The MPE/V and MPE/XL versions are completely compatible – saving time and money.**

#### **HIBACK/3000 and HIBACK/XL**

- Hi-density data compression
- Full compatible with all HP storage devices
- LAN/DS network support
- Unattended operation
- Hi-speed combined data base and file backup

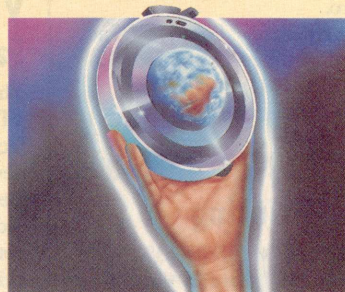
#### **DBTUNE/3000 and DBTUNE/XL**

- Capacity Management
- Preventive Maintenance
- Performance Tuning
- General Maintenance
- Rootfile Maintenance

Functional and reliable tools. The hardware manufacturer and the software house shook hands on the deal upon completion of extensive tests. The customer is the lucky winner.

HI-COMP Hinrichs GmbH  
Eichenlohweg 24  
2000 Hamburg 60  
Telephone: + 49 (40) 630 40 11  
Telefax: + 49 (40) 63160 04

HI-COMP America, Inc.  
305 Broadway, 4th Floor  
New York, N. Y. 10 007  
Telephone: 212-732-1946  
Telefax: 212-233-4678  
Toll free: 1-800-DBETUNE



H · I · C · O · M · P  
INTERNATIONAL

**HICOMP SOFTWARE IS SAVEWARE**

**See us at BARUG, Booth #1009**



Continued from page 28

## HP Announces MAP 3.0 Protocol Analyzer

Hewlett-Packard has introduced a MAP 3.0 protocol analyzer designed for network-development and maintenance testing on Open System Interconnect (OSI) networks.

The HP 4974S MAP protocol analyzer contributes to OSI network testing by decoding the seven-layer MAP protocol stack. It connects to IEEE 802.4 networks and offers testing for the MAP 3.0 protocol stack, including file transfer and management and the manufacturing messaging service.

In addition, the HP 4974S lets users view protocol events so they can debug MAP implementation and increase interoperability. The analyzer is part of HP's family of HP OpenView network-management products.

## AutoMate Initiates Jobs Without An Operator

Complementary Solutions Inc. has released AutoMate, a software product that initiates computer jobs without operator intervention. AutoMate allows PC users to program their computers to perform routine tasks on a predetermined schedule. Tasks such as creating back-up files, printing reports, scheduling batch jobs or any task that can be executed for the DOS prompt may be automatically initiated by AutoMate.

AutoMate also enables PCs with communication capabilities to initiate communications with remote micros, minis or mainframes in an operator unattended environment. The PCs can then go on to perform other tasks automatically.

AutoMate runs on any IBM compatible with a fixed disc and MS-DOS 2.0 or higher. AutoMate utilizes a background TSR program of only 3KB.

AutoMate sells for \$199 or \$249 with Keyboard Macro.

Contact Complementary Solutions Inc., Suite 202, 4470 Chamblee-Dunwoody Rd., Atlanta, GA 30338; (404) 454-8033.

**Circle 384 on reader card**

## MiniSoft 2392 Now Includes PC-To-Host Printing

MiniSoft has released MiniSoft 2392, version 4.0. MiniSoft 2392 features the ability to print PC-based applications such as word processing, spreadsheets and graphics off of printers connected to HP 3000, 9000 and 1000s and VAX computer systems.

MiniSoft 2392 is a terminal emulation and a data communications package designed

for the IBM PC family and compatibles. MiniSoft 2392 provides a complete emulation of the Hewlett-Packard 2392 CRT terminals.

Some features include: ASCII/Binary file copy for file transfers between the PC and HP 3000, DEC VAX, HP 9000 or HP 1000 computer systems, user definable function keys, the ability to break to DOS without logging off, multipage scrolling memory, complete HP printer function support, and support of baud rates from 300 to 19,200.

Price is \$95.

For more information contact MiniSoft Inc., 16315 NE 87th, Suite B101, Redmond, WA 98052; (206) 883-1353.

**Circle 395 on reader card**

## Infotek Systems Introduces Enhancement Boards

Infotek Systems has introduced two new enhancement boards for users of Hewlett-Packard 9000 Series 200/300 workstation computers. The additions to Infotek's comprehensive product line are the MC300 motion controller and the DSP316 digital signal processor (DSP).

The MC300 is a programmable motion controller based on the HP HCTL1000 motion control IC, which provides five control functions for a wide range of industry-standard stepper, DC and DC brushless motors.

The Infotek DSP316 is 16-bit fixed-point DSP that is suited for applications that require Fast Fourier Transforms, digital filtering and correlation. Operating up to 8 MIPS, the board can complete a 1024-point FFT in nine milliseconds.

For more information contact Infotek Systems 1045 S. East St., Anaheim, CA 92815-8508; (714) 956-9300.

**Circle 380 on reader card**

## VITEQ's Benchmark Family Expands

The benchmark family of products from VITEQ has been expanded to include interface capability with RS-232C interface. This new interfacing capability ensures that the Benchmark UPS family of products with "ideal" power protection may be used for all networking applications with a computer having an RS-232C port.

The computer operating system using the RS-232C communications port can transmit or receive information through the VITEQ full duplex interface. Information capable of being transmitted via the interface includes various utility power source and

UPS status indications. In addition, the UPS will accept a shutdown command from the computer system.

Once alerted by the Benchmark UPS that utility power has been interrupted, the operating system can be programmed to initiate automatic shutdown routines utilizing user-defined parameters.

Network users can be notified of the time remaining to log off the system. When the time has elapsed, the operating system writes all data in memory to disc storage and shuts itself down. The entire operation is coordinated to automatically finish within the reserve time of the Benchmark UPS battery.

Prices for the Benchmark UPS with interface capability range from \$1,945 to \$3,345 including interface cable.

Contact VITEQ Corp., 10000 Aerospace Rd., Lanham, MD 20706; (301) 731-0400.

**Circle 381 on reader card**

## Scientific Software Improves Technical Graphics Program

Scientific Software has released GraphStar 2.0, the latest version of its technical graphics program. GraphStar is a full-featured technical and data graphics system, designed to meet the graphics needs of scientists, engineers, mathematicians, analysts and other technical professionals.

GraphStar (\$99) provides features such as Log and Linear scales, automatic or manual scaling, interpolation for drawing smooth curves, text annotations and legends placed anywhere in the graph and a built-in data editor.

Menus are provided for entering the data files to be plotted, the graph set-up parameters and text or legends to be placed in the graph area. These menus give you total control over the plot, including scale divisions, tick marks, plotting symbols and axis labels. High resolution screen previews are provided to allow interactive graph creation and archive files are used to store graphs for later use.

GraphStar is designed to provide the high-quality hard copy graphics required for scientific publications. For most dot-matrix printers, both high and medium-quality outputs are provided. Typical high-resolution copy is 216 x 240 dots per inch. Pen Plotters also are supported. GraphStar runs under PC-DOS and is compatible with CGA, EGA Hercules and VGA graphics adapters. For more information contact Scientific Software Solutions P.O. 956, Valley Forge, PA 19482; (215) 269-0198.

**Circle 391 on reader card**



## ACQPAK — Aquisition And Analysis Package

Intelligent Applications Corp. has announced ACQPAK data aquisition software, a general-purpose acquisition and analysis package that requires no user programming.

ACQPAK captures real-time data automatically from instrumented research and manufacturing processes. It's designed for use by engineers and technicians and provides an uncomplicated way to handle complex data.

Channels are defined in a flexible menu-driven, spreadsheet format. You can collect data, convert it to engineering units and display measurements real-time from up to 999 channels. Basic statistics, including mean, range and standard deviation can be calculated over any desired time interval. Data appears in tabular and graphical formats.

ACQPAK (\$1,500) runs on any computer using HP Pascal 3.2 including HP 9000 Series 200/300, HP Vectra PC-305 and PC-308 with Pascal option and IBM AT and compatibles with HP Language Processor.

ACQPAK is designed to work with a variety of front-end measurement equipment, including the HP 3852 and the HP 3497. Demonstration software is available. Complete ACQPAK systems, integrated with computers and data acquisition hardware also are available directly from the company. Contact Intelligent Applications Corp., P.O. Box 6233, Wilmington, DE 19804-0833; (215) 388-1000.

**Circle 390 on reader card**

## Provident Recovery Offers Relocatable Data Centers

Provident Recovery Systems offers an alternative to disaster recovery by offering relocatable data centers. With multiple locations, Provident's client base covers the continental U.S. and includes major manufacturers, retailers, governmental agencies, research firms and corporations.

A program based on flexibility, service and response to specialized requirements, Provident has been designed to bring all functions of the recovery procession to where

they can be most effectively handled — at the client site. The relocatable recovery center comes equipped with air conditioning, power panels, humidity control, raised-flooring security system generators, Halon fire protection and is available in configurations between 600 and 3,500 square feet for any type hardware.

Contact Provident Recovery Systems, 110 MacKenan Dr., Cary, NC 27511; (919) 469-3325.

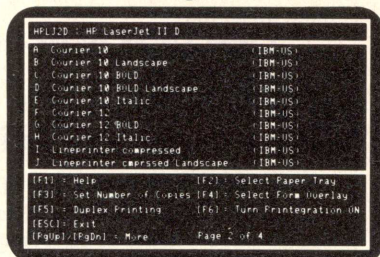
**Circle 383 on reader card**

## OCS/PRIVATE 4.0 Simplifies Password Administration

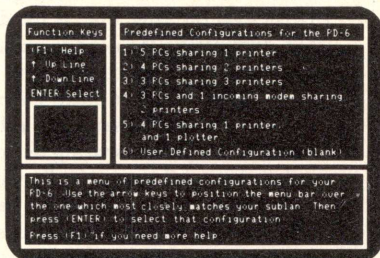
Operations Control Systems (OCS) announced OCS/PRIVATE 4.0, a comprehensive new release of its advanced security management software product for the HP 3000.

OCS/PRIVATE 4.0 provides an approach to password management access control, auditability, automatic log off, jobstream security and self maintenance. The new releases shifts the emphasis of security related

# 4 Ways To Share Laser Printers



**HP LaserJet Series II D™ resident selections are a keystroke away, no matter what applications you're using, and this capability is available for every major brand of printer.**



**AutolInstall provides automatic installation for your particular configuration.**

Digital Products is the leader in providing affordable printer sharing. With more than 300,000 ports installed in a wide range of Fortune 1000 businesses, Digital Products has the experience and leadership to solve your printer sharing problems. Pick the price and performance level that your application requires.

**DIGITAL PRODUCTS, INC.**  
the sub-LAN™ company  
108 Water Street, Watertown, MA 02172,  
617-924-1680, 1-800-243-2333.

FEATURES	\$1195 + PDMS	\$695 + PD	\$495 PDJR	\$495 Laser-Board
100% data integrity and transparent operation	Y	Y	Y	Y
Full desktop publishing	Y	Y	Y	Y
Buffer size (Max.)	4Mb	2Mb	500K	250K
Ports	8-32	6-16	6	4
AutolInstall	Y	Y		Y
Copies	Y (collated)	Y		Y
Popop operations, RAM resident and non-resident	BigPop	SmallPop		LaserPop
Job cancel	Y	Y		Y
Automatic form feed	Y	Y		Y
Forms overlay printing	Y			
Text enhancement	Y			
Font management	Y	Y		
Resource utilization reports	Y			

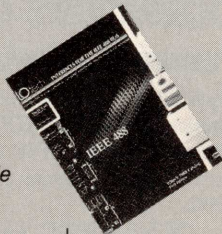
LaserJet Series II Printer is a trademark of Hewlett-Packard Co.

**CIRCLE 153 ON READER CARD**



# HP-IB Interfaces

- HP-IB instrument & plotter interfaces for Vectra, PC, AT, 386, PS/2 & Macintosh
- HP-IB data buffers
- HP-IB bus extenders
- HP-IB converters to RS-232, RS-422, modem, Parallel (Centronics), SCSI, analog I/O, digital I/O, GPIO & BCD
- HP-IB clock and SRQ generator
- HP-IB control for Lotus 123 & Symphony



Call or send  
for your **FREE**  
Technical Guide

**IOtech**

**(216) 439-4091**

Telex 6502820864 • Fax (216) 439-4093  
IOtech, Inc. • 25971 Cannon Road  
Cleveland, Ohio 44146

**CIRCLE 123 ON READER CARD**

## Teach Me/ 3000™

- \* Train new employees on the HP 3000
- \* Modules range from introductory material to system management
- \* Modules on IMAGE, VPLUS, COBOL and Dictionary for the programmer
- \* Less expensive than sending your staff to off-site classes
- \* Better trained employees become more productive, they have higher morale
- \* Improved job satisfaction leads to lower employee turnover
- \* Authoring language available to write your own modules
- \* Free demonstration tape available of all modules and authoring language

For more information, contact:  
Innovative Software Solutions, Inc.  
10705 Colton Street  
Fairfax, VA 22032 U.S.A.

**INNOVATIVE  
SOFTWARE  
SOLUTIONS**

**CIRCLE 120 ON READER CARD**

## NEW PRODUCTS

information from the logo to the individual and thereby greatly simplifies the administration of passwords.

In addition OCS/PRIVATE 4.0 now allows for the suspension of users after a configurable period of inactivity. Any attempted use of an inactive log on is recorded in the OCS/PRIVATE 4.0 violation log file. When necessary a suspended log on can be easily reactivated by the System administrator.

User security has been enhanced through a notification feature that informs users of the date on which they last logged on. This helps alert users to security violations made through the use of their individualized log on procedures.

To prevent the ability to continue "guessing" at a password, OCS/PRIVATE 4.0 will now automatically shut down access to a particular log on after a configurable number of failed attempts.

OCS/PRIVATE 4.0 also utilizes a sophisticated parameter substitution facility that eliminates the need for operators to prepare jobstreams for production. Instead of hardcoding passwords, lockwords, constants and dates into jobstreams, the system allows users to specify variables such as "today's date" or "the last workday of the month." Then during production, OCS/PRIVATE 4.0 automatically retrieves or calculates the correct value of the parameter and substitutes it into the jobstream. Contact Operations Control Systems, 560 San Antonio Rd., Palo Alto, CA 94306; (415) 493-4122.

**Circle 323 on reader card**

### HP Test Expert Incorporates AI

Hewlett-Packard has introduced HP Test Expert, an expert system for electronics manufacturing that reduces redundant testing, eliminates the need to write diagnostic software and can reduce the software costs.

A component of the HP ATS 2000, HP Test Expert is one of the first ATE tools to incorporate artificial intelligence capabilities.

HP Test Expert features include multiple-fault diagnosis, hierarchical diagnosis and case-adaptive test ordering.

### Network Research Corp. Ships Fusion TCP/IP

Network Research Corp. (NRC) announced shipment of its FUSION Network Software for Hewlett-Packard 9000 Series 200 and 300 Pascal workstations (PWS). The new NRC software provides users of HP 9000 workstations with TCP/IP (Transmission Control

Protocol/Internet Protocol) multi vendor networking compatibilities for the first time.

TCP/IP, adopted by the Department of Defense, is the most widely used de facto standard for multivendor communications in engineering, manufacturing and commercial networking environments.

Hewlett-Packard funded and provided equipment for the development of the FUSION for PWS product. While HP is providing marketing and technical assistance, NRC is directly selling and supporting the product. HP will recommend the product as an HP listed product.

FUSION for PWS features file transfer capabilities using the File Transfer Protocol (FTP) and virtual terminal (TELNET) applications which are executed from the Pascal operating system's menu-driven interface.

NRC is bundling network management utilities in FUSION for PWS plus a programmatic socket library interface which can be used to develop network applications and perform interprocess communications.

NRC is also in the process of developing FUSION Networking Software for HP 9000 BASIC workstations. This software is expected to be available during the third quarter of 1989.

The U.S. list price for FUSION for PWS is \$1,000.

For more information contact, Jean Sylwanowicz, Network Research Corp., 2380 N. Rose Ave., Oxnard, CA 93030; (805) 485-2700.

**Circle 324 on reader card**

### Digital Products Inc. Offers Forms Capabilities

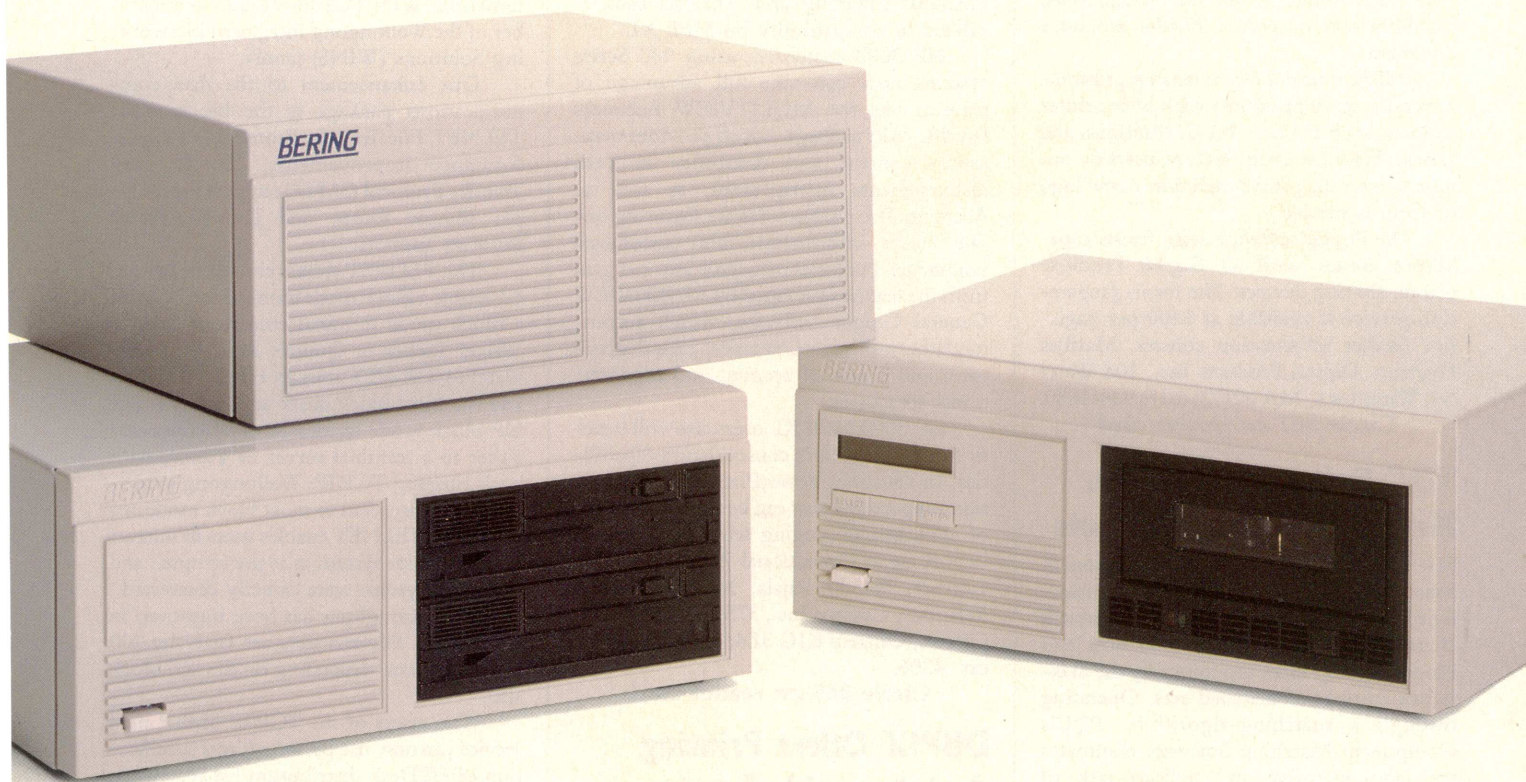
Digital Products Inc., a developer of subLAN and peripheral sharing products, announced an enhanced version of its Popup printer control software that enables users to print company letterheads and forms on plain paper using a laser printer.

The forms overlay capability enables users to select and print an image, logo or letterhead at the same time as the document itself, eliminating the need to change paper trays. In addition, the command to print the image can be stored in memory in Digital Products' NetCommander subLAN or PrintDirector printer sharing device, so the overlay command automatically will be sent to the printer at the start of the user's next print job. This feature makes it possible for several users to print multiple forms without changing paper trays.

The forms overlay feature can be used with Hewlett-Packard Series II, IID, LaserJet Plus and any HP LaserJet Plus-compatible



# Bering's solution series.



Bering introduces three new members to its family of Hewlett-Packard subsystems. Each of these products is specifically tailored to meet today's demanding storage needs.

The new EconoPac 5050, delivers 500MB of storage capacity, an ideal solution for local area networking, or any other large capacity requirement.

The TwinPac II offers removable storage for security, expandability, exchangeability, backup and archiving.

The all new 5¼ inch format means even more convenience and continued reliability.

And Bering's new 2000MB Tape backup subsystem can handle any backup need. State-of-the-art helical scan technology ensures efficient, error free backup.\*

Bering's products are 100% hardware and software compatible with HP computers using CS/80 and SS/80 command sets, including, HP9000 Series 200/300/500, HP1000, and HP3000 computers.

Also, each unit is protected by a one year warranty.

Bering remains committed to high quality and high performance at a savings.

Call Bering's sales department for more information.

**BERING**<sup>™</sup>

240 Hacienda Avenue  
Campbell, CA 95008-6687  
800-237-4641

Bering, EconoPac, and TwinPac II are trademarks of Mountain Computer, Inc. HP, HP1000, HP3000, and HP9000 Series 200/300/500 are trademarks of Hewlett-Packard. ©Mountain Computer, Inc. June 1988 Printed in U.S.A.

\*Product available for shipment 1/89

CIRCLE 104 ON READER CARD



laser printers. Up to 32 overlays can be sorted at a time.

Digital Products also offers a form preparation service. The company scans and convert images such as letterheads and company logos into HP format for overlay forms. These custom forms can be loaded from a personal computer into the printer memory. Text descriptions of the overlays appear as options in the Popup menu, enabling any user to select a desired letterhead or heading.

Featured in the printer control software is JetTalk, Digital Products' printer control language. JetTalk enables users to control LaserJet printers without having to learn HP PCL commands. JetTalk commands make it easy, for example, for users to change fonts, highlight text or print a border around a document.

JetTalk is useful for enhancing printouts generated from programs with little printer support, such as Lotus 1-2-3, Multiplan and DBase. With the forms feature, users do not have to reset the printer each time a new logo or form is needed.

The Popup software with forms capabilities comes with all Digital Products printer sharing devices. The forms preparation service is available at \$400 per page. For further information contact, Marilyn Peterson, Digital Products Inc., 108 Water St., Watertown, MA 02172; (617) 924-1680.

**Circle 367 on reader card**

## TQC Software Identifies Matching Component Sets

Test Quality Co. has released Component Matching Software, an engineering productivity tool that matches measured component characteristics by specified tolerances and produces component groupings by the maximum number of matched sets. Operating through a matching-algorithm, TQC's Component Matching Software eliminates the labor-intensive and tedious task of manual comparisons and calculations of units, which, in any event, would rarely result in the optimum number of matched sets.

TQC's Component Matching Software operates from a table of measured data that lists measurement points and matching tolerances by component identification number.

TQC 2120 Component Matching Software is designed for automated laboratory and production test environments. It operates on the HP 9000 Series 200/300 under BASIC 5.X. The software cost is \$2,800, with immediate delivery available.

For more information contact, Marketing

Dept., Test Quality Co., 2316 Walsh Ave., Santa Clara, CA 95051; (408) 986-8880.

**Circle 361 on reader card**

## Cognos Offers Financial Applications

Cognos Inc. announced the availability of its financial application software packages, MULTIVIEW 5.04 and PowerPlan 5.01F, for the HP 3000 Series 900 midrange computers.

MULTIVIEW Financial Software, which consists of the integrated product set of MULTIVIEW GL, AP and AR, is now available in native mode PowerHouse on the MPE-XL operating system. PowerPlan, the Financial Planning and Analysis tool, is offered in compatibility on MPE XL.

HP 3000 customers using 900 Series systems now can take full advantage of features like the MULTIVIEW Accounts Payable (AP) package, which provides maximum control and flexibility in cash disbursements management, as well as Accounts Receivable software featuring on-line credit information and customized statements. Financial managers also can gain from the features provided by MULTIVIEW General Ledger software, which accommodates multiple-companies, period structures and charts of account and organizational structures.

HP 3000 MPE XL users also will benefit from PowerPlan's consolidation capabilities. In addition, PowerPlan is a true decision support tool that can be used in a variety of applications ranging from Performance Reporting to Operational Analysis. Contact, Wendy Rajala, Manager, Public Relations, Cognos Inc., 3755 Riverside Dr., Ottawa, Ontario K1G 3Z4; (613) 738-1440, ext. 4306.

**Circle 365 on reader card**

## DBPIX Offers Printing And Assembly Service

DBPIX now offers a printing and assembly service using its database diagramming utility software. Instead of purchasing the software, any user of IMAGE or Turbo-IMAGE on any HP 3000 can send a copy of a database schema to DBPIX and DBPIX will print the database diagram for a flat fee. For an additional fee based on the number of sets in the database, DBPIX also assembles the database diagram into a complete database poster. Various character sizes and styles are available including high-quality LaserJet fonts. These poster-size diagrams are ideal for system documentation, database training and educa-

tion, DBPIX provides the database documentation facility that IMAGE and Turbo-IMAGE always have lacked. U.S. list price for the printing service is \$50 plus shipping. For further information contact, DBPIX, Box 223, West Newton, MA 02165; (617) 527-7087.

**Circle 363 on reader card**

## Wollongong Ships HP 3000 Communications Software

The Wollongong Group has introduced an enhanced version of WIN/TCP for MPE/V that's designed to give customers access to block mode applications across their TCP/IP networks. WIN/TCP for MPE/V is a member of the Wollongong Integrated Networking Solutions (WINS) family.

One enhancement to the data communications package is the block mode TELNET, File Transfer Protocol (FTP) performance improvements, Simple Mail Transfer Protocol (SMTP) support for multiple address forms, and Domain Name Resolver support.

The TELNET enhancements in Release 1.1 enable a block mode terminal (or PC with a block mode terminal emulator—such as Walker Richer & Quinn's Reflection software) to TELNET into an HP 3000 system and run most block mode applications. The HP block mode terminal can be connected either to a terminal server or a host, with both running TCP/IP. Wollongong's capability is transparent to most block mode applications. TELNET enables users to interact with a remote system as if the terminal and the other system were directly connected.

FTP throughput has been improved in Release 1.1. File transfers are faster by 100 to 300 percent, depending on file and block size.

Also, users of the TCP/IP SMTP mail service can now use partial address specification of HPDesk distribution list recipients. This allows more natural support for HPDesk users on other machines.

Release 1.1 now supports use of the Domain Name Service for all host references.

The TCP/IP (Transmission Control Protocol/Internet Protocol) standards allow two or more cooperating processes on different computer systems to communicate. TCP/IP hosts may be any mixture of computers and operating systems that are interconnected by the TCP/IP networking software.

Available immediately, WIN/TCP for MPE/V licensing fees are based on processor size. Prices begin at \$5,000 for a Micro 3000 Series 3X, to \$12,500 for a Series 70. Educa-



tional discounts are available.

For further information contact, The Wollongong Group Inc., 1129 San Antonio Rd., Palo Alto, CA 94303; (415) 962-7100.

**Circle 325 on reader card**

## ONLINE-BACKUP/3000 V2.12 Eliminates Downtime

Version 2.12 of ONLINE-BACKUP/3000 from ORBiT Software completely eliminates the need for system downtime in the backup of Image databases.

The original ONLINE-BACKUP/3000 enabled the operator to back up data during normal system productivity. Ten minutes of downtime (for system synchronization) was required.

Version 2.12 also features true disc-to-disc backup, enabling the user to restore backed-up data from the disc file and to copy backup disc files to tape for multiple backup copies. It eliminates the need for multiple tape drives for companies which require more than one backup.

Other features of Version 2.12 enable the user to select various parameters of the backup, including compression factors and acceptable error rates.

For more information contact, ORBiT Software (USA) Inc., 319 Diablo Rd., Suite 218, Danville, CA 94526; (800) 6-ONLINE or (415) 837-4143.

**Circle 364 on reader card**

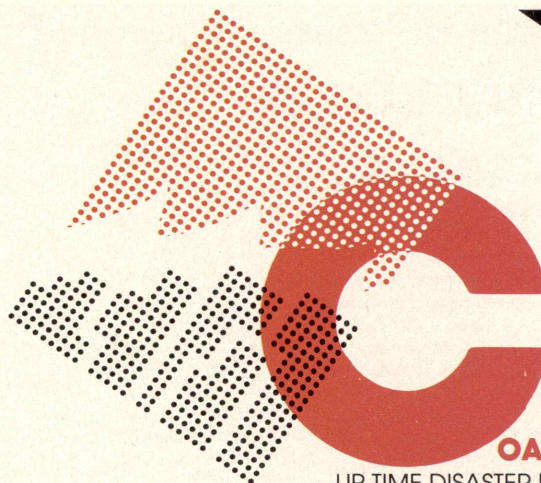
## New Warehouse Management System

Bakco Data Inc., an innovator of System Solutions for Warehousing, announced an enhanced version of its Warehouse Management system (WMS) functioning on the DEC VAX and Hewlett-Packard HP 3000 computers.

The Bakco WMS provides management with the ability to reduce warehouse labor, increase warehouse space utilization and improve service levels.

The Bakco WMS provides the Warehouse Manager with the ability to "preslot" each full and partial skid of merchandise in the most efficient manner. The Bakco WMS automatically can account for merchandise size and weight constraints, as well as frequency of use, to determine the best location within the warehouse to store inventory. For more information contact, Bakco Data Inc., 1417 Lake Cook Rd., Deerfield, IL 60015; (312) 940-8330.

**Circle 366 on reader card**



## OAST TO COAST HOTSPOTS

UP TIME DISASTER RECOVERY: Self-contained relocatable working environment with HP 3000-70s at your site or at ours, whatever your disaster.

- More CPUs, memory, discs available
- Fiber optics mux to local terminals
- Data comm solutions (LANs, networks)
- Generator, line conditioning
- Client use for migration to 900 series



**UP TIME®**  
DISASTER RECOVERY, INC.  
643 W. Stadium Lane  
Sacramento, CA 95834  
(916) 648-1282  
FAX (916) 649-9090

**CIRCLE 195 ON READER CARD**

## How Secure Is Your Data Centre?

- Are your users individually identified and authenticated?
- Are their actions authorized and monitored?
- Are they prevented from being in direct contact with MPE?
- Are your PC users prevented from issuing unauthorized sequences of MPE commands?
- Do your users require multiple log-ons and a myriad of associated passwords to access all their authorized application functions?

### 'Softac I - The HP3000 Application Manager'

will secure your Data Centre, provide a consistent interface to all application functions from the one log-on, and ..... much more.

**Your users will love it; your auditors will love it.**

Tres Associates  
P.O. Box 9802-231  
Austin, Texas 78766  
U.S.A.  
Telephone: (512)346-0904  
Fax: (512)459-9588

Softac Pty Limited  
P.O. Box 132  
Sutherland, N.S.W. 2232  
AUSTRALIA  
Telephone +61 2 963-1690  
Fax: +61 2 526-1971

**CIRCLE 135 ON READER CARD**



## Eastern American HP Users Conference

May 30 to June 2 **NECRUG 89** Atlantic City

NorthEast Central HP Regional Users Group, Inc.  
NECRUG's 10th Anniversary

Tuesday, Evening May 30 to Friday, June 2

Harrah's Marina Hotel/Casino

Keynote Speaker

Quality Technical Presentations

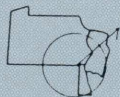
Round-table Discussions

Vendor Exhibits

Information Exchange with your Peers

Wednesday is Tutorial Day

Tenth Anniversary Reception



DATA COMMUNICATIONS/LANS  
SYSTEM MANAGEMENT  
PC's IN THE HP ENVIRONMENT  
PRECISION ARCHITECTURE  
MPE, MPE-XL

PERFORMANCE TUNING  
DATA BASE  
SECURITY  
DISASTER RECOVERY  
NEW WAVE, and MUCH MORE...

Need more information? Call Jeri Fuller at 215-825-7760.

Please make your room reservations directly with Harrah's Marina at 800-242-7724. The special conference rate is \$79 a night in the Tower or \$89 for the Atrium Suites. Guarantee your room in the hotel by calling before May 3.

Make check payable to:

NECRUG, Inc.

c/o Jeri Fuller

U.S. Mortgage Insurance Co.

P.O. Box 190

Blue Bell, PA 19422

\$279 before April 28

\$319 after

Non-Members add \$21

Fee includes valet parking, 3 breakfasts,

2 luncheons, coffee breaks, 3 receptions and conference gifts.



CIRCLE 160 ON READER CARD

## Why this publication and more than 1,300 others let us go over their books once a year.

Some publications, we're sorry to say, keep their readers undercover. They steadfastly refuse to let BPA (Business Publications Audit of Circulation, Inc.) or any other independent, not-for-profit organization audit their circulation records.

On the other hand, over 1,300 publications (like this one) belong to BPA. Once a year, BPA auditors examine and verify the accuracy of our circulation records.

The audit makes sure you are who we say you are. The information helps advertisers to determine if they are saying the right thing to the right people in the right place.

It also helps somebody else important: you. Because the more a publication and its advertisers know about you, the better they can provide you with articles and advertisements that meet your information needs.

BPA. For readers it stands for meaningful information. For advertisers it stands for meaningful readers. Business Publications Audit of Circulation, Inc. 360 Park Ave. So., New York, NY 10010.



## Fourhills Technology Extends Life For DSG/3000

Fourhills Technology Group has announced new software that will extend the life of DSG/3000 chart drawing software.

CI/DSG allows DSG/3000 charts to be drawn on the new Spectrum class HP 3000 computers. Users upgrading to the new models can continue to run existing charts and can create new charts.

Users of 4GL languages now can create customized charts directly for those language. Users of standard languages can create production charts without using intrinsics. Simple ASCII files that contain all the information needed to draw a chart can be created by these languages.

Chart drawing can be deferred to off hours with the batch processing feature. Sites with spoolable plotters or printers can draw charts in off hours without operator intervention. Other sites can have the plotters/printers monitored by the computer operator. This saves CPU time during peak hours and better utilizes staff.

For more information contact Fourhills Technology Group, P.O. Box 243 Cupertino, CA 95015; (408) 446-2725.

Circle 382 on reader card

## Pacific Data Releases Plotter In A Cartridge

Pacific Data Products has announced Plotter in a Cartridge, a HP-GL emulation cartridge for laser printers. The cartridge is a complete emulation of Hewlett-Packard's 7475A plotter and implements HP-GL on a Hewlett-Packard LaserJet Series II printer.

Plotter in a Cartridge plugs into the font cartridge slot of the printer and is fully compatible with all major CAD, presentation graphics and spreadsheet graphics software programs. The cartridge produces high-quality graphics in a fraction of the time required for pen plotters or PC-based software emulations. Features include variable pen/line thickness, x and y axis scaling, arc and circle generation, plot rotation, multiple fill and shading patterns plus full paper sizing capabilities. Plots automatically are rescaled to the paper, configuration in use including regular, legal, A3, A4 paper transparent media and envelopes.

The list price for Plotter in a Cartridge is \$395.

Contact Pacific Data Products, 6404 Nancy Ridge Rd., San Diego, CA 92121; (619) 552-0880.

Circle 388 on reader card



## Carolian Systems Offers Resource Planning Tool

Carolian Systems International Inc. has released version A.04.00 of SYSPLAN. This new version has been enhanced to provide greater power and flexibility for analyzing historical system resource utilization and for predicting future performance trends.

Highlights of the release include the ability to modify the value of any point or points on a line graph, allowing you to create a "what if" type of report based on expertise and knowledge of forthcoming events.

The new database feature in SYSPLAN allows you to report on one or several machines in your network and to display that information on a single graph. With this capability you also can group several machines together making it easy to do a "site-by-site" report. In all, the new database allows you to create five new types of network-wide reports.

For more information contact Carolian Systems International Inc., 3397 American

Drive, #5, Mississauga, Ontario, L4V 1T8; (800) 263-8787.

Circle 389 on reader card

## Lasersoft/3000 Now Includes Multiple Part Forms Module

Business Systems International has announced the release of the new version of Lasersoft/3000 a multiuser electronic forms design and data merge application for HP 3000s and the HP LaserJet Series of printers, including the new LaserJet Series IID.

Release 1.4 of Lasersoft/3000 includes the Multiple Part Forms Module that allows users to replace even the most complex pre-printed form sets with electronic forms. The new module supports printing multiple part forms without requiring modifications to the user's application. Up to 99 different parts may be printed from a single page of output data. The multiple part may have a unique routing designation printed on it and be routed to a different department printer.

Lasersoft/3000 includes a forms com-

position module that allows electronic form files to be created and maintained on the HP 3000. It also includes a printer management module which allows forms and soft fonts to be downloaded directly from the HP 3000 to the laser printer, either on-line or by batch job, which can be executed by itself or as part of an application job stream.

Lasersoft/3000 operates on any model of the HP 3000 computer and supports the Hewlett-Packard LaserJet/PLUS, LaserJet Series II, LaserJet IID, LaserJet 2000 and any true emulation of these printers.

For more information contact Business Systems International Inc., 20942 Osborne St., Canoga Park, CA 91304; (818) 998-7227.

Circle 386 on reader card

*Note: For more information about HP products, contact the Hewlett-Packard sales office listed in the white pages of your telephone directory.*



**Ambroise Paré**  
1510-1590

*French surgeon. The most celebrated of the Renaissance. He reformed the treatment of gunshot wounds by abolishing cauterization with burning oil.*

*...the tradition lives!*

## SESAME the HP3000 Security System

New world discovers old. Created with the care and genius of French science and technology, SESAME sets the standard of excellence for the new world. The threat of virus, theft, tampering, or friendly error has met a mighty foe.

### SESAME provides:

- Comprehensive protection against unauthorized sessions
- Integrated access control for large and small networks
- Automatic logoff of inactive sessions
- Easy routing of reports to local printers

Please call or write today.

**MIGHTY KEYS**  
1720 Section Road, Suite 111  
Cincinnati, Ohio 45237  
513-731-4966

### Distributors:

W. Germany  
**MANDATA**  
(02151) 590014

United Kingdom  
**SYSTEM SOFTWARE**  
44 905 794646

Spain  
**SCAN**  
402 4099

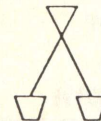
Congo  
**SERIC**  
835034

## MIGHTY KEYS

*System Software Specialists*  
123, rue de Petit Vaux  
F 91360 ÉPINAY-SUR-ORGE/France  
(1) 64 54 82 32

## OFF-SITE, INC.

Corporate Contingency Planning



## DISASTER RECOVERY FOR THE ENTIRE BUSINESS

Data Processing Audits  
Contingency Planning  
Hot & Cold Sites

## Protection For Your Information Assets

32 Ellicott St., Batavia, NY 14020 (716) 343-9775

CIRCLE 189 ON READER CARD

CIRCLE 128 ON READER CARD



## HP CAREERS - NATIONWIDE

IS YOUR PROFESSIONAL CAREER  
A PERSONAL PRIORITY?

The HP market is **HOT!!!** with too many opportunities to mention. The demand is for P/A's, S/A's, System Managers; COBOL as well as 4GL's; manufacturing and financial applications experience. When you want experienced friendly help, from someone who specializes and knows your market... ask for the best...



CALL  
Diane Amos, C.P.C.

**Amos &  
Associates**

633-B Chapel Hill Road  
Burlington, NC 27215  
(919) 222-0231

CIRCLE 217 ON READER CARD

## HP CONSULTANTS & RECRUITERS!

Advertise your services in  
**HP PROFESSIONAL's  
Consultants' Directory.**

- **Reach 30,000+ HP Users** — Commercial & technical, corporate executives to technical staff.
- **High Visibility** — One page of listings dedicated to consultants & recruiters.
- **Reader Service Numbers** — Fast, accurate leads with full demographics.
- **Reasonable Rates**

Call Cynthia Leitzel  
(215) 542-7008  
to reserve space

**RESERVE SPACE NOW!**

## DATA PROCESSING PROFESSIONALS

### WESSON, TAYLOR, WELLS

We are a major national contract programming and consulting firm experiencing continued dynamic growth. We have numerous, exciting and challenging opportunities for individuals with AT LEAST 2 years experience in the following disciplines:

<b>POWERHOUSE</b>	<b>TRANSACT</b>	<b>PROTOS</b>
<b>SPEEDWARE</b>	<b>MM/3000</b>	<b>COBOL</b>
<b>MNT/3000</b>	<b>CUSTOMIZER</b>	

We offer an excellent compensation and outstanding benefit/incentive plans. Relocation assistance is also available. For more information, call our National Recruiting Manager, Paul Clifton



at (800) 982-4463 or (803) 438-4843. To apply, send your resume to: **WESSON, TAYLOR, WELLS, P.O. Box 1587, Dept. P-4, Camden, SC 29020.** An Equal Opportunity Employer.

CIRCLE 229 ON READER CARD

## COME TO CALIFORNIA

OCS is the leading vendor of HP 3000 data center management software. Due to our continued success, we have the following openings:

### SENIOR SYSTEMS SUPPORT REP

Provide consulting, training and support to our worldwide installed base of over 4000 products. Moderate travel.

### SENIOR DEVELOPMENT ENGINEER-PASCAL

Take on a full range of responsibilities from new-product concept to release. Develop scheduling, program library management and security software for MPE and MPE-XL.

### SALES - MAJOR ACCOUNT MANAGER

Work in a professional environment selling our state-of-the-art products to major corporations.

### OCS REWARDS CONTRIBUTION

OCS offers exceptional compensation, benefits, profit sharing and stock options, plus a unique opportunity for challenge, visibility and personal accomplishment. Contact us in complete confidence. OCS, 560 San Antonio Road, Palo Alto, CA 94306; 415-493-4122.

## REPRINTS?

If you would like  
reprints of any article  
or advertisement,  
contact

Reprint Resources,  
155 Commerce St.,  
Fort Washington, PA  
19034

(215) 643-9143,  
FAX (215) 643-9164.

## HP CAREERS NATIONWIDE

P/A: Powerhouse, RPG	to28K
P/A: COBOL, VIEW	to35K
P/A: COBOL, Powerhse	to32K
PC/Office Automation	to35K
P/A: PASCAL or 'C'	to35K
S/A: COBOL, VIEW	to40K
S/A: ASK: ManMan	to42K
DBA	to45K
Project Manager: COBOL	to45K

### CALL TODAY!

JON DURRE, DEBBIE BLALOCK,  
or KEN MILLER  
(919) 222-0490

**Personnel  
Placement, inc.**

P.O. Box 1815, Barlington, NC 27216-1815

CIRCLE 219 ON READER CARD

## PRODUCT SHOWCASE

## WHEN THEY THINK HP

Dupont Duke University  
General Motors Motorola  
McDonnell Douglas GTE

OUR NAME  
ALWAYS COMES UP.



**813/573-0330**

FAX 813/573-1577

"WE BUY, SELL AND RENT HP 1000/9000/3000  
COMPUTERS, PERIPHERALS & TEST EQUIPMENT!"  
13160 56th Court • Suite 503 • Clearwater, FL 34620

CIRCLE 203 ON READER CARD

## DP-AID

A PC-based Disaster Recovery  
planning tool which provides

- An easy to use, menu-driven format
- IMPACT/RISK Analysis
- An alternative to expensive professional consulting
- A method to organize critical data in a customized plan

Demos Available

Purchase Price: \$1495.00

Includes Disks and Manual

**Computer Solutions, Inc.**  
NJ (201) 672-6000

CIRCLE 207 ON READER CARD

## The HyPoint Advantage . . . INVENTORY

"Specializing in Full  
Line of  
HP 3000 Products"

Buy ■ Sell ■ Trade ■ Lease

HyPoint Technology  
433 E. Royalton Road  
Cleveland, OH 44147

**1-800-231-5500**

**216-526-0323**

CIRCLE 212 ON READER CARD



## INFORMATION

Rates: 1 time: \$400  
3 times: \$370  
6 times: \$340  
12 times: \$285

Size: 1/9 page — 23/16" x 23/4"

Typesetting and composition available.

Camera ready mechanical required.

For more information call  
Cynthia Leitzel at  
(215) 542-7008.

## BUY, SELL LEASE, TRADE.

Hewlett Packard



23950 COMMERCE PARK, BEACHWOOD, OHIO 44122  
(216) 292-0635 Fax: 216-292-4838 Telex: 205129  
CRC is a Trademark of Computer Remarketing Corporation

CIRCLE 206 ON READER CARD

HEWLETT-PACKARD

BUY REPAIR  
and and  
SELL SERVICE

## ADVANT

Computer Exchange

HP Systems Specialists

US (800) 824-8418  
CA (209) 823-6777  
FAX (209) 823-3304

CIRCLE 231 ON READER CARD

9-Track Tape Subsystem  
for the IBM PC/XT/AT



Now you can exchange data files between your IBM PC and any mainframe or mini-computer using IBM compatible 1600 or 6250 BPI 9-Track tape. System can also be used for disk backup. Transfer rate is up to 4 megabytes per minute on PCs and compatibles. Subsystems include 7" or 10 1/2" streaming tape drive, tape coupler card and DOS compatible software. For more information, call us today!

**QUALSTAR\***

9621 Irontdale Ave., Chatsworth, CA 91311  
Telephone: (818) 882-5822

CIRCLE 220 ON READER CARD

BUY • SELL • RENT • LEASE

**HEWLETT-PACKARD**

Computer Equipment

**9000 • 3000 • 1000**

AVAILABLE FOR IMMEDIATE DELIVERY

800-422-4872  
FAX 713-855-1213

**TSA**

TECHNICAL & SCIENTIFIC  
APPLICATION, INC.

4654 Highway 6 N., Suite 101  
Houston, TX 77084

"The Awesome HP Source"

CIRCLE 225 ON READER CARD

COMPLETE HP SYSTEMS AVAILABLE

ALL PERIPHERALS

All items in stock — immediate delivery  
All warranted to qualify for  
manufacturer's maintenance.

**ConAm Corporation**

Canada / US 800-643-4954  
California 213-829-2277  
FAX 213-829-9607

RENT • LEASE

CIRCLE 208 ON READER CARD

**HP 3000**

Buy — Sell — Trade  
IN STOCK NOW 23925 & 7978B

CALL

713-460-2344  
(Fax) 713-460-2351

**Surety  
Systems**

6617 Flintrock  
Houston, TX 77040

CIRCLE 221 ON READER CARD

WE NEED TO BUY OR  
TRADE FOR  
HP 3000 SYSTEMS

NO BROKERS PLEASE  
CALL RICHARD

**KELLY**

COMPUTER SYSTEMS

1101 SAN ANTONIO ROAD  
MOUNTAIN VIEW, CA 94043

415-960-1010

FAX: 415-960-3474

EXCESS EQUIPMENT AVAILABLE  
FOR PURCHASE

CIRCLE 233 ON READER CARD

BUY • SELL • LEASE • TRADE

**Preowned HP**

DESKTOPS \* PERIPHERALS  
\* TEST EQUIPMENT \*

**(509) 662-9039**

**ELECTRONIC  
SERVICES, INC.**

GUARANTEED EQUIPMENT  
AT **VERY**  
COMPETITIVE PRICES!!

**FAX 509-662-8271**

5187 Malaga-Alcoa Hwy.  
Malaga, Washington 98828

CIRCLE 211 ON READER CARD



BUY • SELL • RENT • LEASE

## HEWLETT-PACKARD

Computer Equipment

SERIES 80, 100, 200, 300, 500, 9800  
ALSO

Plotters, Printers, Disk Drives

CPUs, etc...

AVAILABLE FOR IMMEDIATE DELIVERY

800-422-4872

FAX 713-855-1213

# TSA

TECHNICAL & SCIENTIFIC  
APPLICATION, INC.

4654 Highway 6 N., Suite 305  
Houston, TX 77084

"The Awesome HP Source"

CIRCLE 226 ON READER CARD

## HP-3000/HP-9000

Fidelity Systems, Inc.



LET US WORK FOR YOU

ALSO:  
OTC  
DATA PRODUCTS  
CUMULUS  
IO NET

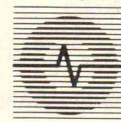
CALL

713-266-3009

CIRCLE 183 ON READER CARD

BUY • SELL • LEASE

Hewlett-Packard  
3000 • 1000



OCEONICS

Computer Products Division

1-800-727-0551

804-498-1414

FAX: 1-804-498-2432

United Kingdom 011-44-252-34-44-66

FAX: 011-44-252-33-66-08

We Buy HP 3000 - 70s.

Worldwide Offices • Premium Prices

Aldershot (UK)

Singapore

Australia

VA Beach

Houston

Dallas

CIRCLE 216 ON READER CARD

## 9000, 3000, 1000 SYSTEMS PERIPHERALS COMPATIBLES

Buy • Sell • Trade  
Maintenance

**COMPUTECH**  
SYSTEMS CORPORATION

(206) 883-4107

(US) 800-882-0201

CIRCLE 204 ON READER CARD

## HEWLETT-PACKARD

Buy, Sell, Rent and Repair  
Computers, Peripherals and Options

★ ★ ★ ★ ★

SALES

SERVICE

(408) 270-1100

(408) 270-1170

★ ★ ★ ★ ★

FAX — (408) 270-1183

ELM — 62015192

TELEX — 9102500341

**CRISIS COMPUTER CORP.**

2298 Quimby Road

San Jose, CA 95122-1356

CIRCLE 209 ON READER CARD

## Save up to 60%!

Top dollar when you sell!

We buy or sell any HP equipment,  
including:

COMPUTER SYSTEMS • DISK DRIVES

SOFTWARE • ACCESSORIES

TERMINALS • MAG TAPES

All Equipment Guaranteed.

Specialists in hard-to-find equipment.

Immediate delivery of in-stock items.

CALL Bill Alexander at

312-916-1400

FAX 3129161361

COMPUTER MEDIA, INC.

1420 Brook Drive

Downers Grove, IL 60515

CIRCLE 205 ON READER CARD

C.S.U.  
INDUSTRIES,  
INC.



The second source for

HEWLETT-PACKARD

HP 9000, 3000, 1000 equipment

• Complete Configurations

• Individual CPUs — Peripherals

• Memory Upgrades and Feature Enhancements

WE BUY:

Highest Prices Paid

WE SELL:

All Items Sold Are Guaranteed for HP Maintenance

\* Trade-Ins Accepted \* Short and Long Term Leases Available \*

Over 900 satisfied Hewlett-Packard users  
are our customer references.

CALL (516) 239-4310

Teletype (516) 239-8374

135 Rockaway Turnpike • Lawrence, NY 11559

CIRCLE 202 ON READER CARD

## WHOLESALE H-P

"There's simply no reason to pay more."

2624B .....	\$199	7933H .....	\$4,375
2392A .....	495	150B .....	275
2601A .....	195	2686A .....	895
ADCC .....	375	7475A .....	880
RuggedWriter New \$1,295			

MICRO • 9000 • 3000 • 1000

CAD • PARTS



Please Call  
Mark Leonard  
(813) 254-5948

2104 West Hills Ave.  
Suite 301  
Tampa, FL 33606

We Buy, Sell, & Trade All HP Equipment  
Sales • Parts

CIRCLE 200 ON READER CARD

## NORCO COMPUTER SYSTEMS, INC.

Hewlett-Packard Quality  
at a NorCo Price

1000 • 3000 • 9000 • 250

BUY — SELL  
TRADE — LEASE

Processors, Peripherals  
and Systems

925D Bassett Road

Cleveland, OH 44145-1108

FAX 2168925507

216-892-1920

1-800-892-1920  
(Outside Ohio)

CIRCLE 215 ON READER CARD



## VT 100/102/220

Terminal Emulation/File Transfer

- For Series 200/300
- Runs Under Basic
- Very Fast



**\$395.00**

30-day unconditional  
money-back guarantee

### SYSTEM WORKS

4318 Centennial Trail  
Duluth, GA 30136

**(404) 446-6098**

Preferred by major  
U.S. industries & educational  
institutions.

CIRCLE 222 ON READER CARD

## IBM ↔ HP File Interchange

PCLIF is a software utility which permits the transfer of files between IBM PC's, PS/2's and HP technical (LIF) computers thru the exchange of floppy disks. Using the PC for 5.25" or the PS/2 for 3.5" transfers does not require additional hardware. An internal and an external 3.5" disk drive is available to allow the PC family to perform 3.5" disk transfers.

Innovative Software Systems  
14252 Culver Dr., Suite A-444  
Irvine, CA 92714 (714) 249-2056

CIRCLE 213 ON READER CARD

## SERIES 200/300 UTILITIES VALUE-PACK™

**FILE UTILITY** provides wildcards to copy, catalog, or purge *multiple files* in a *single operation*. Great for backing-up hard disks, copying floppies, and general disk management. You'll wonder how you ever lived without it!

*Plus* **SYSTEM MENU &  
TERMINAL EMULATOR**

**ALL FOR JUST \$145!**

Runs on Basic 3.0 and up. Credit Cards &  
PO's welcome. Call or write for brochure.

**APPLIED MICROCOMPUTER SYSTEMS**  
Page Hill Road, Chocorua, NH 03817  
(603) 323-8666

CIRCLE 201 ON READER CARD

**Oswego Software, Inc.**

**Hewlett-Packard  
to IBM PC  
file copy**

IBM PC,  
PS/2, IBM AT &  
Vectra can read  
& write HP ASCII,  
Binary or Series 80  
floppies. No additional  
hardware needed.

**IBM PC FILE COPY ... \$495**

Call us. **OSWEGO SOFTWARE**  
312/554-3567 507 N. Adams St.  
FAX 312/554-3573 Oswego, IL 60543  
TELEX 858 757 U.S.A.

CIRCLE 218 ON READER CARD

## Exclusive Opportunity for HP Software Vendors

### 3 Great Reasons to Advertise in HP Professional's Product Showcase Software Section

#### 1. High Visibility

Only software is featured in this exclusive section.

#### 2. Reach Buyers

Over 31,000 buying subscribers receive every issue.

#### 3. Low Cost

Rates: 1X = \$370

6X = 340

12X = 285

**Call Cynthia Leitzel at (215) 542-7008 to reserve space now!**

# How you live may save your life.

You may find it surprising that up to 60% of all cancers can be prevented. By avoiding excessive exposure to sunlight, by not smoking cigarettes, by not overeating and by following a diet high in fiber and low in fat.

The battle isn't over but we are winning.  
Please support the American Cancer Society.





## ADVERTISERS INDEX

Reader Service Number	Page
101 Access Technology.....	25
102 Adager.....	B. Cover
161 APPIC USA, Inc.....	37
192 APPIC USA, Inc.....	82
185 Arkwright Inc.....	35
104 Bering Industries.....	87
157 Best Power Technology.....	45
106 Bradmark Computer Systems.....	I.B. Cover
180 Bradmark Computer Systems.....	5
107 Business Systems International.....	58
110 Carolian Systems.....	4
188 Chestnut Data Systems.....	47
109 Cognos Corporation.....	15
193 Cognos Corporation.....	17
164 Collier-Jackson, Inc.....	75
177 Compugraphic Corporation.....	56
177 Compugraphic Corporation.....	57
167 CompuTech Systems Corp.....	63
158 Computer Solutions, Inc.....	28
198 Cumulus Technology.....	1
153 Digital Products.....	85
112 Dynamic Information Systems Corp.....	43
113 EMC Corporation.....	9
154 Facer Information Design.....	73
115 Herstal Automation Ltd.....	55
190 Hewlett-Packard (Network Systems Sector).....	6-7
116 Hi-Comp International.....	83
117 IEM, Inc.....	2
118 IMACS Systems Corp.....	11

Reader Service Number	Page
119 Indigo Software.....	79
172 Infocentre Corp.....	61
144 Infotek Systems Corp.....	21
120 Innovative Software Solutions.....	86
170 Intelligent Interfaces.....	59
123 IOTECH.....	86
163 Linx Inc.....	69
126 Martinsound Technologies.....	41
191 MCBA.....	29
128 Mighty Keys.....	91
197 Mitchell Humphrey & Co.....	39
149 National Instruments.....	80
160 NECRUG.....	90
189 Off-Site, Inc.....	91
130 Orbit Software USA, Inc.....	81
131 Peripherals.....	47
134 RAET Software Products.....	19
156 Running Mate.....	23
194 Smith, Dennis & Gaylord.....	53
135 Softac Pty Ltd.....	89
145 SST.....	38
179 STR Software Company.....	58
147 TAPEDOC.....	66
196 Ted Dasher & Associates.....	38
165 Tynlabs Corp.....	13
140 Tynlabs Corp.....	51
139 Unified Software, Inc.....	44
141 Unison Software.....	I.F. Cover
195 Uptime.....	89
186 Vitalsoft.....	67
142 Walker Richer & Quinn, Inc.....	30-31

## [ CALENDAR ]

### [ APRIL ]

**26-28:** The International Association of UNIX systems users and Patricia Seybold's Office Computing Group will jointly sponsor the Executive Uniforum Symposium at the Santa Barbara Biltmore Resort Hotel, in Santa Barbara, CA. For further information, contact Judy Hurwitz at Patricia Seybold's Office Computing Group, 148 State Street, Suite 612, Boston, MA 02109; (617) 742-5200.

**16-18:** The Corporate Electronic Publishing Systems (CEPS) Show and Conference will be held at Chicago's McCormick Place. Topics range from desktop publishing to open architecture and system integration. Contact Kim Ray, Cahner's Exposition Group, 999 Summer St., P.O. Box 3833, Stamford, CT 06905; (203) 964-0000.

**18:** Unisys Education Marketing and Sales is sponsoring a Disaster Recovery Planning/Information Security Management training program. The programs will be held at Unisys Education Centers nationwide and are scheduled now through June 1989. Contact Unisys Corp., P.O. Box 2191, Princeton, NJ; (800) 222-0966 or in NJ (201) 329-3899.

### [ MAY ]

**3-5:** The Southern California Regional Users Group (SCRUG) will sponsor its 1989 Technical Conference and Vendor Show in Pasadena, CA. For more information contact Karen Zimmerman, SCRUG, P.O. Box 84219, Los Angeles, CA 90073; (213) 450-3383.

**4:** Arthur Young and Company is organizing a seminar on Financial Applications of Expert Systems, (Los Angeles, CA) For more information contact Barbara Day at Arthur Young and Company, 515 South Flower St., Los Angeles, CA 90071; (213) 977-3284.

**16:** NOWRUG is holding a meeting at 6:30 p.m. in the Greenwood Hotel in Bellevue, WA. The speaker is Craig Fransen of Fransen/King Ltd. The topic is HP 3000/PC Integration: Can You Get There From Here? Cost \$10. Contact Sharon Robbins, (206) 282-6888.

**30-6/2:** NECRUG will hold the 10th Annual Eastern American Hewlett-Packard Users Conference at Harrah's Marina Hotel and Casino in Atlantic City, NJ. Send \$279 check to NECRUG Inc, c/o Jeri Fuller, U.S. Mortgage Insurance Co., P.O. Box 190, Blue Bell, PA 19422; (215) 825-7760. (After 4/28 send \$319, also non-NECRUG members add \$21.) For more information contact Jeri Fuller, for vendor information contact Scott Baldwin, (215) 875-5324.

### [ JUNE ]

**7:** There will be a conference on Intelligent Mapping at the Anaheim Marriot. The theme is "Focus on Desktop Mapping." Contact the conference director, Intelligent Mapping '89, 11956 Bernardo Plaza Dr., Suite 425, San Diego, CA 92128; (800) 882-2058.

## ADVERTISING

### ASSOCIATE PUBLISHER/MARKETING & SALES

Leslie Ringe

### ADVERTISING SERVICES MANAGER

Connie Mahon

### LIST RENTAL MANAGER

Cathy Dodies

### LIST RENTAL SALES Jane L. Hope

### POSTCARD DECKS Mary Browarek

## REGIONAL SALES MANAGERS

**CANADA** Helen B. Marbach

**MID-ATLANTIC/SOUTH ATLANTIC**

Cynthia Leitzel

**MIDWEST/SOUTHEAST** Peter Senft

**921 Bethlehem Pike  
Spring House, PA 19477  
(215) 542-7008**

## REGIONAL SALES OFFICES

### NEW ENGLAND/ INTERNATIONAL

Leslie Ringe

Kristina Wesslen  
Account Executive

Professional Press, Inc.  
238 Bedford St., Suite 3  
Lexington, MA 02173  
(617) 861-1994  
FAX # (617) 861-7707

### NORTHERN CALIFORNIA and NORTHWEST

A. G. Germano  
Regional Sales Manager

Alonna Doucette  
Senior Account Executive  
Professional Press, Inc.  
903 Sneath Lane, Suite 220  
San Bruno, CA 94066  
(415) 873-3368 — 3369  
FAX # (415) 873-6608

### SOUTHERN CALIFORNIA/ SOUTHWEST/COLORADO

David Beardslee  
Regional Sales Manager

Karin Altonaga  
Senior Account Executive

Professional Press, Inc.  
1010 East Union Street, Suite 101  
Pasadena, CA 91106  
(818) 577-5970  
FAX # (818) 577-0073



# Announcing...



**SUPERDEX™** adds unprecedented data retrieval speed and flexibility to the IMAGE, TurboIMAGE, and TurboIMAGE/XL database environments on the HP3000.

**SUPERDEX** allows multiple keys in master or detail sets, generic and partial-key lookups, wildcards, automatic keywording and keyword retrieval, transparent field grouping, sorted sequential access using concatenated keys, and dynamic relational queries across multiple fields,

datasets, and databases.

**SUPERDEX** adds all the features you always wished for in IMAGE, with the flexibility and power of a relational database. It is a natural, compatible extension to IMAGE, using identical intrinsics and requiring only minor program modifications.

So unlock the power in your IMAGE environment. Give **SUPERDEX** a free try today.

\* **SUPERDEX** is a trademarked product name of Bradmark Computer Systems for the SI-IMAGE package developed and implemented by Dr. Wolfgang Matt.

Houston 4265 San Felipe  
Houston, TX 77027  
(713) 621-2808

Buffalo (716) 689-6882  
Cincinnati (513) 891-7867  
Los Angeles (213) 432-7713



**BRADMARK**  
Computer Systems Inc.

CIRCLE 106 ON READER CARD



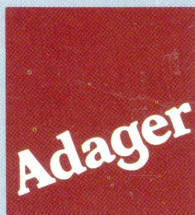
# How do you measure performance in the RISC environment? With numbers, not with words.

Here are the Adager numbers:

Adager runs the BARUG benchmark in 15 minutes on an HP3000 Series 950.

How does Adager accomplish this awesome feat? Find out for yourself: Ask us for your very own BARUG benchmark kit, even if all you have is a modest Series II (vintage 1976).

Adager has the kind  
of magic you like:  
The magic of numbers.



**The Adapter/Manager for IMAGE/3000 Databases**

P.O. Box 2358  
Sun Valley, Idaho 83353  
U.S.A.

From Canada and U.S.A. dial toll-free (800) LDD-REGO  
From other parts of the world, dial + 1 (208) 726-9100

Fax + 1 (208) 726-8191 • Telex 40-3392 Adager • EasyLink 6289-6060

CIRCLE 102 ON READER CARD